

Appendix G: Hazardous Materials Information

G.1 - HAZARDOUS REPORT DATA

FirstSearch Technology Corporation

Environmental FirstSearch™ Report

Target Property:

WEST BALBOA BLVD

NEWPORT BEACH CA 92663

Job Number: MARINA PARK

PREPARED FOR:

MBA

07-07-08



Tel: (781) 551-0470

Fax: (781) 551-0471

Environmental FirstSearch Search Summary Report

Target Site: WEST BALBOA BLVD
NEWPORT BEACH CA 92663

FirstSearch Summary

Database	Sel	Updated	Radius	Site	1/8	1/4	1/2	1/2>	ZIP	TOTALS
NPL	Y	04-07-08	1.25	0	0	0	0	0	0	0
NPL Delisted	Y	04-07-08	0.75	0	0	0	0	0	0	0
CERCLIS	Y	04-22-08	0.75	0	0	0	0	1	0	1
NFRAP	Y	04-22-08	0.75	0	0	0	2	0	0	2
RCRA COR ACT	Y	04-01-08	1.25	0	0	0	0	0	0	0
RCRA TSD	Y	04-01-08	0.75	0	0	0	0	0	0	0
RCRA GEN	Y	04-01-08	0.50	0	0	0	6	-	0	6
RCRA NLR	Y	04-01-08	0.50	0	0	0	1	-	0	1
Federal IC / EC	Y	04-01-08	0.50	0	0	0	0	-	0	0
ERNS	Y	04-22-08	0.50	0	0	0	0	-	4	4
Tribal Lands	Y	12-01-05	1.25	0	0	0	0	0	0	0
State/Tribal Sites	Y	08-08-07	1.25	0	0	0	2	2	0	4
State Spills 90	Y	11-06-07	0.50	0	0	0	3	-	0	3
State/Tribal SWL	Y	04-09-08	0.75	0	0	0	0	0	1	1
State/Tribal LUST	Y	04-11-08	0.75	0	0	1	0	10	0	11
State/Tribal UST/AST	Y	01-03-07	0.50	0	0	0	1	-	0	1
State/Tribal EC	Y	NA	0.50	0	0	0	0	-	0	0
State/Tribal IC	Y	04-27-07	0.50	0	0	0	0	-	0	0
State/Tribal VCP	Y	08-15-06	0.75	0	0	0	0	0	0	0
State/Tribal Brownfields	Y	08-08-07	0.75	0	0	0	0	0	0	0
State Permits	Y	04-16-08	0.50	0	0	0	7	-	2	9
State Other	Y	08-08-07	0.50	0	0	1	2	-	0	3
- TOTALS -				0	0	2	24	13	7	46

Notice of Disclaimer

Due to the limitations, constraints, inaccuracies and incompleteness of government information and computer mapping data currently available to FirstSearch Technology Corp., certain conventions have been utilized in preparing the locations of all federal, state and local agency sites residing in FirstSearch Technology Corp.'s databases. All EPA NPL and state landfill sites are depicted by a rectangle approximating their location and size. The boundaries of the rectangles represent the eastern and western most longitudes; the northern and southern most latitudes. As such, the mapped areas may exceed the actual areas and do not represent the actual boundaries of these properties. All other sites are depicted by a point representing their approximate address location and make no attempt to represent the actual areas of the associated property. Actual boundaries and locations of individual properties can be found in the files residing at the agency responsible for such information.

Waiver of Liability

Although FirstSearch Technology Corp. uses its best efforts to research the actual location of each site, FirstSearch Technology Corp. does not and can not warrant the accuracy of these sites with regard to exact location and size. All authorized users of FirstSearch Technology Corp.'s services proceeding are signifying an understanding of FirstSearch Technology Corp.'s searching and mapping conventions, and agree to waive any and all liability claims associated with search and map results showing incomplete and or inaccurate site locations.

***Environmental FirstSearch
Site Information Report***

Request Date: 07-07-08
Requestor Name: MBA
Standard: ASTM-05

Search Type: COORD
Job Number: MARINA PARK
Filtered Report

Target Site: WEST BALBOA BLVD
 NEWPORT BEACH CA 92663

Demographics

Sites: 46	Non-Geocoded: 7	Population: NA
Radon: NA		

Site Location

	<u>Degrees (Decimal)</u>	<u>Degrees (Min/Sec)</u>	<u>UTMs</u>
Longitude:	-117.923035	-117:55:23	Easting: 414366.981
Latitude:	33.608169	33:36:29	Northing: 3718900.557
			Zone: 11

Comment

Comment:

Additional Requests/Services

Adjacent ZIP Codes: 0 Mile(s)	Services:																																		
<table border="1"> <thead> <tr> <th>ZIP Code</th> <th>City Name</th> <th>ST</th> <th>Dist/Dir</th> <th>Sel</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	ZIP Code	City Name	ST	Dist/Dir	Sel						<table border="1"> <thead> <tr> <th></th> <th>Requested?</th> <th>Date</th> </tr> </thead> <tbody> <tr> <td>Sanborns</td> <td>No</td> <td></td> </tr> <tr> <td>Aerial Photographs</td> <td>No</td> <td></td> </tr> <tr> <td>Historical Topos</td> <td>No</td> <td></td> </tr> <tr> <td>City Directories</td> <td>No</td> <td></td> </tr> <tr> <td>Title Search/Env Liens</td> <td>No</td> <td></td> </tr> <tr> <td>Municipal Reports</td> <td>No</td> <td></td> </tr> <tr> <td>Online Topos</td> <td>Yes</td> <td>07-07-08</td> </tr> </tbody> </table>		Requested?	Date	Sanborns	No		Aerial Photographs	No		Historical Topos	No		City Directories	No		Title Search/Env Liens	No		Municipal Reports	No		Online Topos	Yes	07-07-08
ZIP Code	City Name	ST	Dist/Dir	Sel																															
	Requested?	Date																																	
Sanborns	No																																		
Aerial Photographs	No																																		
Historical Topos	No																																		
City Directories	No																																		
Title Search/Env Liens	No																																		
Municipal Reports	No																																		
Online Topos	Yes	07-07-08																																	

Environmental FirstSearch Sites Summary Report

Target Property: WEST BALBOA BLVD
NEWPORT BEACH CA 92663

JOB: MARINA PARK

TOTAL: 46 **GEOCODED:** 39 **NON GEOCODED:** 7 **SELECTED:** 0

Map ID	DB Type	Site Name/ID/Status	Address	Dist/Dir	Page No.
1	LUST	MOBIL 18-HG7 T0605900496/CASE CLOSED	1500 BALBOA NEWPORT BEACH CA 92663	0.16 SE	1
1	OTHER	MOBIL S S 18-H67 ORCO_GW_87UT166/NOT REPORTED	1500 BALBOA BLVD NEWPORT BEACH CA 92659	0.16 SE	2
2	PERMITS	SOUTH COAST SHIPYARD CAL000300628/ACTIVE	223 21ST ST NEWPORT BEACH CA 92663	0.27 NW	2
3	RCRAGN	SEA SPRAY BOAT YARD CAD982470718/SGN	226 21ST ST NEWPORT BEACH CA 92663	0.27 NW	3
4	PERMITS	LIDO PENINSULA COMPANY CAL000301958/ACTIVE	101 SHIPYARD WAY STE M NEWPORT BEACH CA 92663	0.29 NW	4
5	RCRAGN	BELLPORT GROUP INC CAR000148882/SGN	101 SHIPYARD WAY NEWPORT BEACH CA 92663	0.30 NW	5
6	RCRAGN	ERIC KIEVIT MARINE DIESEL CAD983662883/SGN	151 SHIPYARD WY BERTH C CBN NEWPORT BEACH CA 92663	0.31 NW	6
7	RCRAGN	NEWPORT HARBOR SHIPYARD CAD981653199/SGN	151 SHIPYARD WAY BERTH C NEWPORT BEACH CA 92663	0.31 NW	7
8	RCRANLR	LIDO PENINSULA CO CAD983671843/NLR	201 SHIPYARD WY CABIN NUMBE NEWPORT BEACH CA 92663	0.31 NW	8
9	UST	LIDO PENINSULA CO TISID-STATE33721/ACTIVE	251 SHIPYARD NEWPORT BEACH CA 92660	0.33 NW	9
10	PERMITS	PETROS MARINE SERVICE, INC. CAL000254471/ACTIVE	2270 NEWPORT BLVD NEWPORT BEACH CA 92663	0.34 NW	10
10	PERMITS	SOUTH COAST BOAT YARD INC CAL000000944/INACTIVE	2270 NEWPORT BLVD NEWPORT BEACH CA 92663	0.34 NW	11
11	SPILLS	ETCO HOMES G_SL0605958194/CASE OPEN	2300 NEWPORT BOULEVARD NEWPORT BEACH CA 92663	0.35 NW	12
12	RCRAGN	W B R TRANSPORTATION LLC CAR000121731/TRANSPORTER	7752 MONROE ST NEWPORT BEACH CA 92663	0.36 NW	13
13	PERMITS	BALBOA BOAT YARD INC CAL000091395/ACTIVE	2414 NEWPORT BLVD NEWPORT BEACH CA 92663	0.39 NW	14
14	PERMITS	TERRY MCKENZIE, INC CAL000141436/ACTIVE	1151 W BALBOA BLVD NEWPORT BEACH CA 92661	0.45 SE	15
15	NFRAP	NEWPORT PLATING CO CAD982360356/NFRAP-N	2810 VILLA WAY NEWPORT BEACH CA 92663	0.47 NW	16
16	NFRAP	NEWPORT PLATING CO 3 CAD982360414/NFRAP-N	2815 VILLA WAY NEWPORT BEACH CA 92663	0.47 NW	16
18	OTHER	NEWPORT PLATING COMPANY 3 CAL30340151/PROPERTY/SITE REFERR	2815 VILLA WAY NEWPORT BEACH CA 92661	0.47 NW	17
17	OTHER	NEWPORT PLATING CO. CAL30340050/PROPERTY/SITE REFERR	2810 VILLA WAY NEWPORT BEACH CA 92663	0.47 NW	19
15	RCRAGN	NEWPORT PLATING CAD982360356/SGN	2810 VILLA WAY NEWPORT BEACH CA 92663	0.47 NW	20

Environmental FirstSearch Sites Summary Report

Target Property: WEST BALBOA BLVD
NEWPORT BEACH CA 92663

JOB: MARINA PARK

TOTAL: 46 **GEOCODED:** 39 **NON GEOCODED:** 7 **SELECTED:** 0

Map ID	DB Type	Site Name/ID/Status	Address	Dist/Dir	Page No.
15	SPILLS	NEWPORT PLATING SLC8_189/ADDITIONAL CHARACTER	2810 VILLA WAY NEWPORT BEACH CA	0.47 NW	21
17	SPILLS	NEWPORT PLATING G_SL0605980961/NOT REPORTED	2810 VILLA WAY NEWPORT BEACH CA 92663	0.47 NW	21
16	STATE	NEWPORT PLATING COMPANY 3 CAL30340151/PROPERTY/SITE REFERR	2815 VILLA WAY NEWPORT BEACH CA 92661	0.47 NW	22
15	STATE	NEWPORT PLATING CO. CAL30340050/PROPERTY/SITE REFERR	2810 VILLA WAY NEWPORT BEACH CA 92663	0.47 NW	25
19	PERMITS	SCHOCK MARINE CAL000059574/ACTIVE	504 29TH ST NEWPORT BEACH CA 92663	0.50 NW	28
21	LUST	DELANEYS T0605901362/CASE CLOSED	634 LIDO PARK NEWPORT BEACH CA 92663	0.53 NW	29
20	LUST	UNDESIGNATED PARKING AREA T0605901199/CASE CLOSED	2809 NEWPORT NEWPORT BEACH CA 92660	0.53 NW	30
20	LUST	CITY YARD (FORMER) 083001767T/CASE CLOSED	2809 NEWPORT BLVD NEWPORT BEACH CA 92663	0.53 NW	31
22	LUST	LIDO PARK CONDOMINIUMS T0605902220/CASE CLOSED	601 LIDO PARK NEWPORT BEACH CA 92663	0.54 NW	32
23	LUST	UNOCAL 5310 T0605900346/REMEDIAL ACTION	3001 NEWPORT NEWPORT BEACH CA 92663	0.60 NW	33
24	LUST	GERMAN AUTOS T0605900804/CASE CLOSED	3000 NEWPORT NEWPORT BEACH CA 92663	0.60 NW	34
23	LUST	UNOCAL T0605937174/CASE CLOSED	3001 NEWPORT NEWPORT BEACH CA 92663	0.60 NW	35
25	CERCLIS	CAGNEY TRUST CA0000187997/NOT PROPOSED	SW CORNER OF 32ND ST and NE NEWPORT BEACH CA 92663	0.68 NW	36
26	LUST	BOY SCOUTS OF AMERICA SEA BASE T0605901174/CASE CLOSED	1931 COAST NEWPORT BEACH CA 92663	0.69 NE	37
27	LUST	NEWPORT BEACH CITY HALL T0605900150/CASE CLOSED	3300 NEWPORT NEWPORT BEACH CA 92658	0.70 NW	38
28	LUST	WORLD OIL 42 T0605901106/CASE CLOSED	3401 NEWPORT NEWPORT BEACH CA 92660	0.73 NW	39
29	STATE	ORANGE COUNTY REFINING CO. WELL 3 CAL30130028/PROPERTY/SITE REFERR	213 42ND ST. NEWPORT BEACH CA 92660	1.13 NW	40
30	STATE	SOUTH BASIN OIL COMPANY CAL30130024/PROPERTY/SITE REFERR	204/206 43RD STREET NEWPORT BEACH CA 92663	1.17 NW	42

Environmental FirstSearch Sites Summary Report

Target Property: WEST BALBOA BLVD
NEWPORT BEACH CA 92663

JOB: MARINA PARK

TOTAL: 46 **GEOCODED:** 39 **NON GEOCODED:** 7 **SELECTED:** 0

Map ID	DB Type	Site Name/ID/Status	Address	Dist/Dir	Page No.
	ERNS	UNKNOWN 297590/MARINE VESSEL (EPA R	NEWPORT BEACH HARBOR/3812 R NEWPORT BEACH CA 92663	NON GC	N/A
	ERNS	UNKNOWN 256292/UNKNOWN (EPA REGIONS	NEWPORT BEACH MARINA NR CORN NEWPORT BEACH CA	NON GC	N/A
	ERNS	NEWPORT PLATING CO 13332/UNKNOWN	NEWPORT PLATING CO NEWPORT BEACH CA	NON GC	N/A
	ERNS	UNKNOWN 306819/MARINE VESSEL (EPA R	PIER 19TH ST NEWPORT BEACH CA 92663	NON GC	N/A
	PERMITS	REMOTE/ MACHINE SHOP/ HORNBLOWER CAL000326181/ACTIVE	C 815 WEST 17TH ST STE 10 NEWPORT BEACH CA 92663	NON GC	N/A
	PERMITS	CLINICAL FORMULA LLC CAL000160517/ACTIVE	888 W 16TH ST NEWPORT BEACH CA 92663	NON GC	N/A
	SWL	NEWPORT TERRACE LF SWIS30-AB-0168/CLOSED	WEST 19TH ST. DEAD END NEWPORT BEACH CA	NON GC	N/A

Environmental FirstSearch
Street Name Report for Streets within 1 Mile(s) of Target Property

Target Property: WEST BALBOA BLVD
NEWPORT BEACH CA 92663

JOB: MARINA PARK

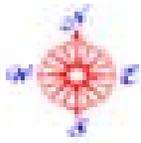
Street Name	Dist/Dir	Street Name	Dist/Dir
10th St	0.58 SE	Marino Dr	0.79 NE
11th St	0.50 SE	McFadden Pl	0.29 NW
12th St	0.40 SE	Newport Blvd	0.28 NW
13th St	0.32 SE	Newport Pier	0.33 SW
14th St	0.24 SE	Nomad St	0.29 NW
15th St	0.15 SE	Ocean View Ave	0.84 NE
16th St	0.08 SE	Old Newport Blvd	0.92 NW
17th St	0.06 SW	Park Ln	0.87 NW
18th St	0.11 SW	Park Pl	0.86 NE
19th St	0.18 NW	Piazza Genoa	0.27 NE
20th St	0.22 NW	Piazza Lido	0.37 NE
21st Pl	0.31 NW	Pirate Rd	0.87 NE
21st St	0.27 NW	Private St	0.40 NW
22nd St	0.30 NW	Rhine Pl	0.34 NW
23rd St	0.36 NW	River Ave	0.96 NW
24th St	0.40 NW	Riverside Ave	0.83 NW
25th St	0.42 NW	Saint Andrews Rd	0.79 NE
26th St	0.40 NW	Santa Ana Ave	0.96 NW
27th St	0.48 NW	Seashore Dr	0.76 NW
28th St	0.41 NW	Shipyard Way	0.31 NW
29th St	0.47 NW	Short St	0.79 NW
30th St	0.50 NW	Signal Rd	0.92 NE
31st St	0.55 NW	Snug Harbor Rd	0.90 NE
32nd St	0.55 NW	Strada Ctr	0.37 NE
33rd St	0.73 NW	Strada Palermo	0.47 NE
34th St	0.77 NW	The Arc	0.28 NW
35th St	0.81 NW	The Rhine	0.35 NW
36th St	0.86 NW	The Rialto	0.90 NW
37th St	0.91 NW	Tustin Ave	0.78 NE
38th St	0.93 NW	Via Antibes	0.52 NW
39th St	0.98 NW	Via Barcelona	0.48 NW
6th St	0.96 SE	Via Cordova	0.43 NE
7th St	0.87 SE	Via Dijon	0.39 NE
8th St	0.77 SE	Via Eboli	0.37 NE
9th St	0.65 SE	Via Fermo	0.33 NE
Aliso Ave	0.85 NE	Via Firenze	0.30 NE
Anchorage Way	0.21 NW	Via Florence	0.35 NE
Anza St	0.31 NW	Via Genoa	0.28 NE
Arbor Dr	0.84 NE	Via Graziana	0.29 NE
Avon Aly	0.75 NE	Via Havre	0.27 NE
Avon St	0.84 NE	Via Ithaca	0.28 NE
Balboa Coves	0.91 NW	Via Jucar	0.30 NE
Bayshore Dr	0.73 NE	Via Koron	0.31 NE
Beach Dr	0.19 NW	Via Lido	0.52 NW
Beacon St	0.88 NE	Via Lido Nord	0.46 NE
Bolivar St	0.24 NW	Via Lido Soud	0.27 NE
Buena Vista Blvd	0.93 SE	Via Lorca	0.33 NE
Cabrillo St	0.20 NW	Via Malaga	0.60 NW

Environmental FirstSearch
Street Name Report for Streets within 1 Mile(s) of Target Property

Target Property: WEST BALBOA BLVD
 NEWPORT BEACH CA 92663

JOB: MARINA PARK

Street Name	Dist/Dir	Street Name	Dist/Dir
Central Ave	0.78 NW	Via Mentone	0.35 NE
Channel Pl	0.92 NW	Via Nice	0.37 NE
Channel Rd	0.19 NW	Via Oporto	0.61 NW
Circle Dr	0.83 NE	Via Orvieto	0.39 NE
Clay St	0.98 NE	Via Palermo	0.41 NE
Cliff Dr	0.79 NE	Via Quito	0.44 NE
Clubhouse Ave	0.69 NW	Via Ravenna	0.47 NE
Coral Pl	0.93 NE	Via San Remo	0.49 NE
Court St	0.19 SW	Via Trieste	0.52 NE
Crestview Dr	0.74 NE	Via Undine	0.54 NE
Drake St	0.19 NW	Via Venezia	0.57 NE
Edgewater Ave	1.00 SE	Via Waziers	0.60 NE
El Modena Ave	0.88 NE	Via Xanthe	0.64 NE
El Paseo St	0.19 NW	Via Yella	0.67 NE
Finley Ave	0.72 NW	Via Zurich	0.69 NE
Fremont St	0.19 NW	Vielle Pl	0.11 SW
Fullerton Ave	0.82 NE	Villa Way	0.43 NW
Irvine Ave	0.80 NE	Vista Dr	0.81 NE
Kings Rd	0.73 NE	W Balboa Blvd	0.05 SW
La Jolla Dr	0.98 NW	W Bay Ave	0.11 NW
La Jolla Ln	0.98 NW	W Coast Hwy	0.72 NE
Lafayette Rd	0.42 NW	W Oceanfront	0.12 SW
Lake Ave	0.67 NW	Waverly Dr	0.95 NE
Lido Park Dr	0.34 NW	Zurich Cir	0.70 NE
Lindo Ave	0.97 SE		
Marcus Ave	0.69 NW		



Environmental FirstSearch

1 Mile Radius
ASTM Map: NPL, RCACOR, STATE Sites

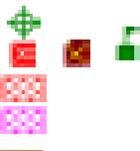


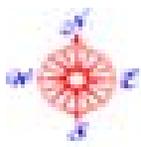
WEST BALBOA BLVD, NEWPORT BEACH CA 92663



Source: 2005 U.S. Census TIGER Files

- Target Site (Latitude: 33.608169 Longitude: -117.923035)
 - Identified Site, Multiple Sites, Receptor
 - NPL, DELNPL, Brownfield, Solid Waste Landfill (SWL), Hazardous Waste
 - Triballand.....
 - Railroads
- Black Rings Represent 1/4 Mile Radius; Red Ring Represents 500 ft. Radius





Environmental FirstSearch

.5 Mile Radius
ASTM Map: CERCLIS, RCRATSD, LUST, SWL

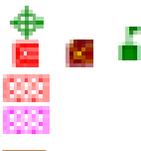


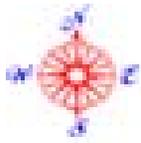
WEST BALBOA BLVD, NEWPORT BEACH CA 92663



Source: 2005 U.S. Census TIGER Files

- Target Site (Latitude: 33.608169 Longitude: -117.923035)
- Identified Site, Multiple Sites, Receptor
- NPL, DELNPL, Brownfield, Solid Waste Landfill (SWL), Hazardous Waste
- Triballand.....
- Railroads
- Black Rings Represent 1/4 Mile Radius; Red Ring Represents 500 ft. Radius





Environmental FirstSearch

.25 Mile Radius

ASTM Map: RCRA GEN, ERNS, UST



WEST BALBOA BLVD, NEWPORT BEACH CA 92663



Source: 2005 U.S. Census TIGER Files

Target Site (Latitude: 33.608169 Longitude: -117.923035)

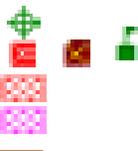
Identified Site, Multiple Sites, Receptor

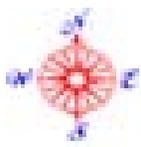
NPL, DELNPL, Brownfield, Solid Waste Landfill (SWL), Hazardous Waste

Triballand.....

Railroads

Black Rings Represent 1/4 Mile Radius; Red Ring Represents 500 ft. Radius





Environmental FirstSearch

.5 Mile Radius

Non-ASTM Map: RCANLR, Spills 90, Permits, Other



WEST BALBOA BLVD, NEWPORT BEACH CA 92663



Source: 2005 U.S. Census TIGER Files

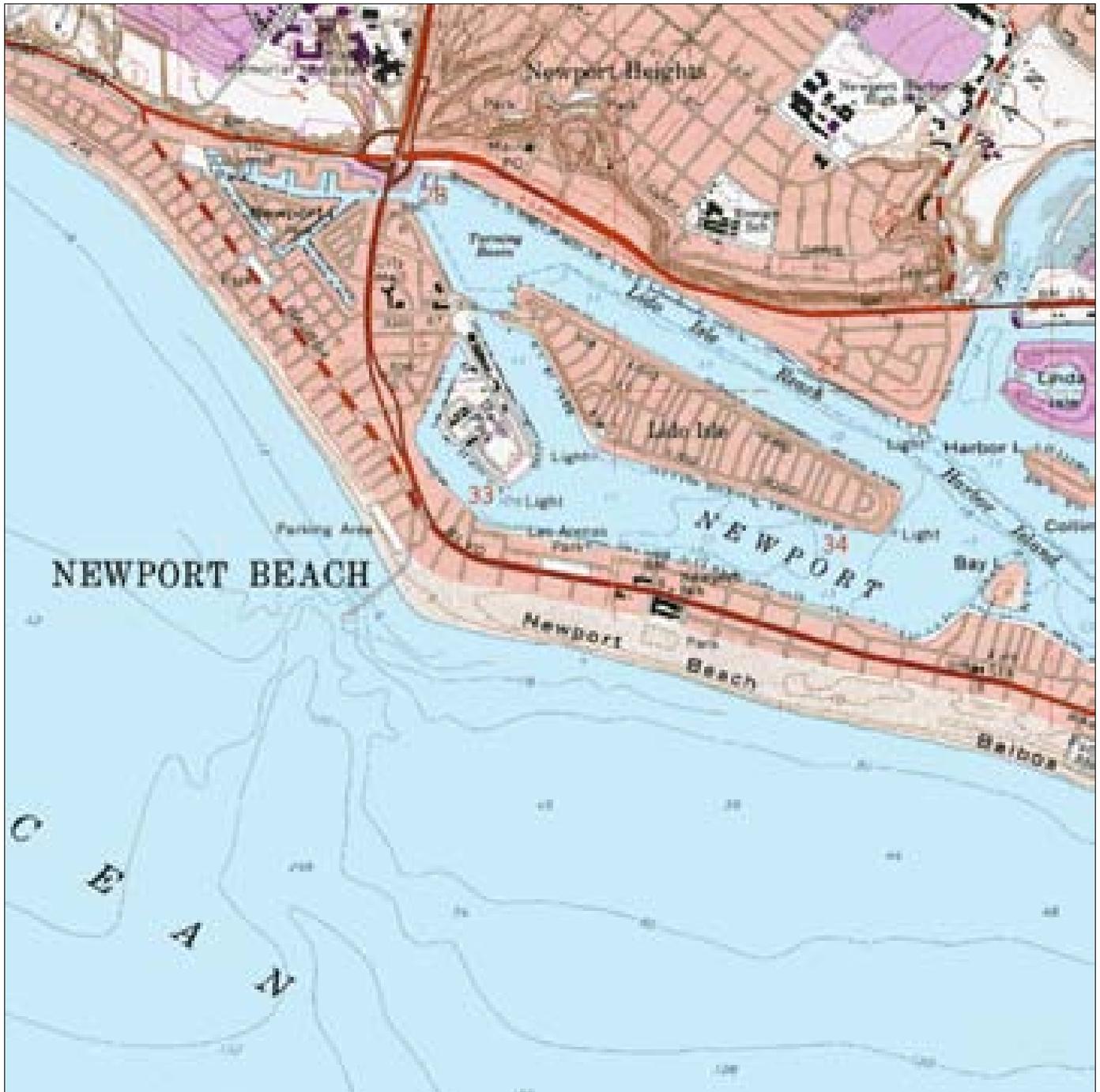
- Target Site (Latitude: 33.608169 Longitude: -117.923035)
- Identified Site, Multiple Sites, Receptor
- NPL, DELNPL, Brownfield, Solid Waste Landfill (SWL), Hazardous Waste
- Triballand.....
- National Historic Sites and Landmark Sites
- Railroads
- Black Rings Represent 1/4 Mile Radius; Red Ring Represents 500 ft. Radius



Site Location Map

Topo : 1.25 Mile Radius

WEST BALBOA BLVD, NEWPORT BEACH CA 92663



SOURCE: SCANNED USGS TOPOGRAPHIC QUADRANGLES
SCANNED BY MAPTECH AND USGS
DISTRIBUTED AUGUST, 2005.

Black Rings Represent 1/4 Mile Radii; Red Ring Represents 500 ft. Radius



Data Supplied by:

Prepared by FirstSearch Technology Corporation 07-07-08

JOB NO.

MARINAPAR

Map Name: NEWPORT BEACH

Date Created: 1965

Date Revised: 1981

FIGURE NO.

Map Reference Code: 33117-E8-TF-024

Contour Interval: 5 feet

1



G.2 - HAZARDOUS RECORDS SEARCH

6.0 REGULATORY RECORDS REVIEW

MBA reviewed available *Standard Environmental Record Sources* from federal and state regulatory agency databases to identify use, generation, storage, treatment and/or disposal of hazardous materials and chemicals or release incidents of such materials, which may have impacted the Property/Site. The regulatory databases were provided to MBA from FirstSearch (see Environmental FirstSearch Report dated July 7, 2008 in Appendices). The *Standard Environmental Record Sources* that were included in this review follow the ASTM standard E1527-05 guidelines.

TABLE 1
Summary of Regulatory Database Search

Database	Min. Search Distance (miles)	Map Finding Summary
National Priorities List (NPL)	1.25	0
Delisted NPL	0.75	0
Comprehensive Environmental Response, Compensation, and Liability Information Systems List (CERCLIS)	0.75	1
CERCLIS – No Further Remedial Action Planned (CERCLIS – NFRAP)	0.75	2
Resource and Recovery Information System – Permitted Treatment and Disposal Facilities (RCRA – TSD)	0.75	0
Corrective Action Report (RCRA COR)	1.25	0
RCRA Generators (LQG, SQG)	0.50	6
RCRA-NLR	0.50	1
Federal, State, Tribal IC/EC	0.50	0
Emergency Response Notification System (ERNS)	0.50	0
Tribal Lands	1.25	0
State Sites Database (CalSites)	1.25	4
State/Tribal VCP	0.75	0
State/Tribal Brownfields	0.75	0
Spills-1990	0.50	3
Solid Waste Facilities/Landfill Sites (SWL)	0.50	1
Other	0.50	3
Permits	0.50	9
Active Underground Storage Tank Facilities/ Aboveground Storage Tank (UST/AST)	0.50	1
Leaking Underground Storage Tank (LUST)	0.75	11

Due to the Property's length covering roughly three city blocks, the *approximate minimum search distance* for each *Standard Environmental Record Source* listed above was increased by at least 0.25 mile.

Leaking Underground Storage Tanks (LUST)

Each California Regional Water Quality Control Board (RWQCB) compiles an underground storage tank (UST) case list that identifies sites of soil and groundwater contamination caused by unauthorized releases from leaking USTs (LUSTs). A review of the LUST case list identified LUST sites within the search radius as listed in Table 1 and summarized below:

According to the database report, the closest LUST site is Mobil 18-HG7 at 1500 Balboa in Newport Beach. According to the database, this facility reported a gasoline release in June 1986 that affected other groundwater and the case was closed in October 2000. Based on the regulatory status, the above identified LUST activities at this facility are not considered a concern to the Property.

Based on information obtained during the site visit and review of the database report, all remaining LUST sites are located at least 0.40 mile from the Property. Based on the distance, topographic location, and/or regulatory status, these facilities are not considered a concern to the Property.

Other

This database contains information concerning Orange County groundwater cleanup facilities. A review of the database identified sites within the search radius as listed in Table 1 and summarized below:

According to the database report, the closest Orange County groundwater cleanup site is Mobil 18-HG7 at 1500 Balboa in Newport Beach. According to the database, a release of gasoline affected the groundwater and no additional violations were listed in the database. This facility is also identified in the LUST database and is discussed in detail above. Based on the distance, topographic location, and/or regulatory status, this facility is not considered a concern to the Property.

Based on information obtained during the site visit and review of the database report, all remaining Orange County groundwater cleanup sites are located at least 0.3 mile from the Property. Based on the distance, topographic location, and/or regulatory status, these facilities are not considered a concern to the Property.

Registered Underground Storage Tanks (UST)

The County EHD compiles a registered underground storage tank (UST) list that identifies facilities with on-site USTs. A review of the UST list identified sites within the search radius as listed in Table 1 and summarized below:

Based on information obtained during the site visit and review of the database report, the identified UST site is located approximately 0.2 mile from the Property. Based on the distance, topographic location, and/or regulatory status, this facility is not considered a concern to the Property.

State Sites Database

This California EPA database identifies known and potential hazardous substance sites targeted for cleanup). A review of the State Sites case list identified facilities within the search radius as listed in Table 1 and summarized below:

Based on information obtained during the site visit and review of the database report, all identified State Sites facilities are located at least 0.3 mile from the Property. Based on the distance, topographic location, and/or regulatory status, these facilities are not considered a concern to the Property.

RCRIS Generator

The EPA's Resource Conservation and Recovery Act facilities database identifies properties which report generation, storage, transportation, treatment, or disposal of hazardous waste. RCRIS small and very small quantity generators are facilities which generate less than 1000 kg/month of non-acutely hazardous waste. RCRIS large quantity generators are facilities which generate more than 1000 kg/month of non-acutely hazardous waste. A review of the Generator list identified Generator sites within the search radius as listed in Table 1 and summarized below:

Based on information obtained during the site visit and review of the database report, all identified Generator sites are located at least 0.15 mile from the Property. Based on the distance, topographic location, and/or regulatory status, these facilities are not considered a concern to the Property.

Solid Waste Facilities/Landfill Sites (SWF/LF)

The California Integrated Waste Management Board maintains the Solid Waste Information System which is an inventory of the solid waste facilities in the state of California. A review of the SWF/LF list identified SWF/LF sites within the search radius as listed in Table 1 and summarized below:

One solid waste landfill was listed as an unmapped site in the FirstSearch report. This facility cannot be plotted due to errors or missing information in the regulatory records. MBA reviewed

the unmapped solid waste landfill site in the database report and determined the facility is not considered a concern to the Property.

Permits

This database contains information concerning Orange County permitted facilities. A review of the database identified sites within the search radius as listed in Table 1 and summarized below:

Based on information obtained during the site visit and review of the database report, all identified Permits sites are located at least 0.15 mile from the Property. Based on the distance, topographic location, and/or regulatory status, these facilities are not considered a concern to the Property.

RCRA-NLR

The EPA's list of all registered hazardous waste generators includes sites that are classified as NLR (no longer regulated) generator facilities. A review of the NLR list identified NLR sites within the search radius as listed in Table 1 and summarized below:

Based on information obtained during the site visit and review of the database report, the identified NLR site is located approximately 0.2 mile from the Property. Based on the distance, topographic location, and/or regulatory status, this facility is not considered a concern to the Property.

CERCLIS/NFRAP

The Comprehensive Environmental Response, Compensation and Liability Information Sys (CERCLIS) database contains data on potentially hazardous waste sites that have been reported to the US EPA by states, municipalities, private companies and private persons. CERCLIS contains sites which are either proposed to or on the National Priorities List (NPL) and sites which are in the screening and assessment phase for possible inclusion on the NPL. The No Further Action Planned Report (NFRAP) database contains information pertaining to sites which have been removed from the U.S. EPA's CERCLIS database. NFRAP sites may be sites where, following an initial investigation, no contamination was found, contamination was removed quickly without need for the site to be placed on the NPL, or the contamination was not serious enough to require federal Superfund action NPL consideration. The database identified sites within the search radius as listed in Table 1 and summarized below:

Based on information obtained during the site visit and review of the database report, all identified CERCLIS/NFRAP sites are located at least 0.3 mile from the Property. Based on the distance, topographic location, and/or regulatory status, these facilities are not considered a concern to the Property.

CERCLIS

CERCLIS contains data on potentially hazardous waste sites that have been reported to the US EPA by states, municipalities, private companies and private persons. CERCLIS contains sites which are either proposed to or on the National Priorities List (NPL) and sites which are in the screening and assessment phase for possible inclusion on the NPL. The database identified sites within the search radius as listed in Table 1 and summarized below:

Based on information obtained during the site visit and review of the database report, the identified CERCLIS site is located approximately 0.55 mile from the Property. Based on the distance, topographic location, and/or regulatory status, this facility is not considered a concern to the Property.

Emergency Response Notification System (ERNS)

Emergency Response Notification System (ERNS) records and stores information on reported releases of oil and hazardous substances. The database identified sites within the search radius as listed in Table 1 and summarized below:

Seven ERNS facilities were listed as unmapped sites in the FirstSearch report. These facilities cannot be plotted due to errors or missing information in the regulatory records. MBA reviewed the unmapped ERNS sites in the database report and determined the facilities are not considered a concern to the Property.

SPILLS

This database is provided by the California Regional Water Quality Control Board. The database identified sites within the search radius as listed in Table 1 and summarized below:

Based on information obtained during the site visit and review of the database report, all identified Spills sites are located at least 0.25 mile from the Property. Based on the distance, topographic location, and/or regulatory status, these facilities are not considered a concern to the Property.

Orphan Sites

Seven additional facilities were listed as unmapped sites in the FirstSearch report. These facilities cannot be plotted due to errors or missing information in the regulatory records. MBA reviewed the unmapped sites in the database report and determined the facilities are not considered a concern to the Property.

G.3 - MARINA PARK FINAL REPORT

Dredged and Upland Material Evaluation for the Marina Park Master Plan Newport Beach, California

Final Report

PREPARED FOR: City of Newport Beach
Planning Department
3300 Newport Boulevard
Newport Beach, California 92663

PREPARED BY: NewFields
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February 2009



Executive Summary

The City of Newport Beach is in the process of preparing the Environmental Impact Report (EIR) and submitting permit applications in support of the Marina Park project, located on the Balboa Peninsula. The Marina Park project includes the expansion of existing beach areas and marina facilities, including the conversion of approximately 1.13 acres of uplands to a 28-slip marina. Sediment and soils throughout the proposed marina complex will be excavated to accommodate the project depth of -12 ft. MLLW plus a 2 ft. overdredge. Approximately 62,000 cubic yards (CY) of soil/sediment is proposed for removal. Approximately 5,000 CY representing the top five feet of soil in the upland area will be excavated and used for project fill and is not considered as part of the proposed dredge volume. Approximately 57,000 CY is proposed for aquatic disposal. The primary disposal options under consideration for the dredged materials are 1) beach nourishment under Regional General Permit Number 67 or individual permit for unconfined aquatic disposal as governed by the U.S. Army Corps of Engineers (USACE)/U.S. Environmental Protection Agency (USEPA) guidelines set forth in the Inland Testing Manual (ITM; USACE/USEPA 1998), and 2) ocean disposal at disposal site LA-3 based on guidance provided by the Ocean Testing Manual (OTM; USACE/USEPA 1991).

NewFields LLC conducted a dredged-material evaluation of the proposed dredged material from the Marina Park marina. The objective of this sampling and analysis program was to characterize the dredged materials from three dredged material management areas (Areas A, B, and C) within the Marina Park project area. Area A included that portion of the site currently occupied by the mobile home park and represented an estimated dredge volume of 21,328 cy with 2,370 cy of overdredge. Area B included that area currently occupied by the exposed beach above 0 ft MLLW, with an estimated volume of 13,869 cy with 2,849 cy of overdredge. Area C included that portion of the site that is below 0 ft. MLLW, with an estimated volume of 13,713 cy with 4,571 cy of overdredge. Sediment was also collected from the LA-3 Reference site. The reference sediment provided a point of comparison for material proposed for placement at the LA-3 ocean disposal site.

Sampling and Analysis

Sediment samples were collected from five stations in Area A and four stations in Area B using a direct-push corer on November 26, 2008. Samples from Area A were sampled from 5 ft. below the ground surface to a depth of -14.5 ft. MLLW (project depth plus a 2-ft overdredge and 0.5 ft. z-layer sample). The surface material (upper 5 ft.) was not included in the dredged material evaluation. Sediment samples from Area B included the surface sediment (beach sands) to a -14.5 ft MLLW. Sediment samples from Area C were collected from seven stations using a vibracorer sampler, sampling from the sediment surface (from -4 to -8 ft MLLW to -14.5 ft MLLW).

Each of the cores was divided into an upper and lower section. For Areas A and B, that division was based on the transition from recent sands to ancient Bay sand deposits. That layer generally occurred between 10 and 12 ft. below ground surface. For Area C, the upper composite represented more recently deposited fine sediments and the lower composite represented the coarser ancient Bay sand deposits. The upper section of each core within an area was combined into an upper area composite and each of the lower sections within an area was combined into a lower area composite.

Sediment chemistry was evaluated for all upper and lower composites. Analytical chemistry included sediment conventionals (grain size, organic carbon, ammonia, sulfides, Atterberg limits, total recoverable petroleum (TRPH), oil and grease, metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, and zinc), organochlorine pesticides, polychlorinated biphenyls (PCBs), organotins, petroleum aromatic hydrocarbons (14 PAHs), and phthalates.

For the Area C upper and lower composites, Tier III biological tests were conducted, including benthic toxicity tests, water-column toxicity tests, and bioaccumulation tests. Benthic tests provided an estimate of toxicity to benthic organisms at the placement site and included 10-day acute tests with the amphipod, *Ampelisca abdita* and the polychaete, *Neanthes arenaceodentata*. Water-column tests were conducted with the suspended-particulate phase (SPP) to provide an estimate of toxicity to water column organisms exposed to sediment as it falls through the water column at the disposal site. It also provided an indication of water-column toxicity that might be encountered during the dredging process. SPP is the liquid portion of a 1:4 sediment/seawater slurry that is designed to simulate the dredging process. Water-column tests were conducted with a dilution series of 1% (larval test only), 10%, 50%, and 100% SPP for each of the test composites using fish, *Menidia beryllina*, the mysid, *Americamysis bahia*, and larval mussels (*Mytilus* sp.). Sediment from the LA-3 disposal site reference site (LA-3 Reference) was included in the benthic tests, but is not required for the SPP tests.

Bioaccumulation potential (BP) testing was conducted with both Area C composites, as well as LA-3 Reference. The bioaccumulation test evaluates the potential for uptake of chemical constituents in the sediment to tissues of benthic organisms at the placement site. The bioaccumulation tests were conducted as 28-d exposures with the clam, *Macoma nasuta*, and the polychaete worm, *Nephtys caecoides*. Following the 28-d test, tissues were analyzed for tissue residues. The chemistry analyte list for tissues exposed to the Area C composites included mercury and lipids.

Evaluation Criteria

Evaluation criteria were based on the ITM/RGP-67 guidance for nearshore placement and OTM guidance for open ocean placement at the LA-3 disposal site. Under the RGP-67 and ITM, sediment is suitable for beach nourishment projects or nearshore placement if the sediment is >80% sand and gravel, is free from chemical contamination, is not plastic (a measure of cohesiveness), and is not likely cause adverse aesthetic effects to the receiving beach. In order to determine whether test sediments were free of chemical contamination, chemical concentrations in test sediments were compared to National Oceanographic and Atmospheric Administration (NOAA) effects-based guidance values called Effects-Range Low (ERL) and Effects-Range Median (ERM). The ERL represents the 10th percentile in NOAA effects data base and the ERM represents the 50th percentile. While not criteria, these guidance values provide an indication of whether chemical concentrations are sufficient to predict benthic community effects. If the ERL/ERM values are exceeded, further biological testing might be required as directed by the ITM.

Under the OTM, sediment is suitable for placement in an open-ocean disposal site if it does not exceed the limiting permissible concentration (LPC) for the disposal site. The LPC is based on comparisons of the results of the sediment chemistry, toxicity tests, and bioaccumulation test in the test treatments with those of the LA-3 Reference site. Chemical concentrations were also screened using the NOAA ERL and ERM values. For benthic toxicity tests, the LPC was defined as no significant toxicity, relative to the LA-3 Reference and survival within 10% of the reference for the polychaete test and 20% for the amphipod test. For the SPP tests, the LPC was based on a comparison of survival or normal development (larval test only) in the 100% SPP of the test treatments with that of the control seawater. If there is a significant difference, then the median

lethal concentration (LC₅₀) for the test treatments is compared with a modeled concentration of SPP at the boundary of the disposal site. Concentrations of targeted chemical analytes in the tissues exposed to test sediments are first compared to the tissues exposed to the LA-3 Reference sediment and second compared to guidance values from the Food and Drug Administration (FDA) and USEPA.

USEPA Region IX and the USACE-LA District will make the final determination of suitability.

Sediment Evaluation

The following section discusses each of the Area composites in context of the requirements for each of the disposal options.

Sediment in the upper composite from Area A (Comp A-U) was characterized by 96% sand and gravel and 0.15% TOC. Sediment from the upper Area B composite (Comp B-U) was also characterized by 96% sand and gravel, with 0.02% TOC. Sediment in the lower composites from Areas A and B (Comp A-L and Comp B-L) were very similar to each other and likely represented the same ancient Bay-sand layer. Sediments in the lower composites were >98% sand and gravel with <0.1% TOC. None of the Comp A or B sediments were plastic, indicating that they would not hold their form. All of the metals were either undetected or detected very near the detection limits. Pesticides, PCBs, tributyltin, TRPH, oil and grease, and phthalates were not detected in any of the four Area A and B composites. PAHs were either undetected or detected at very low concentrations (≤ 32 $\mu\text{g}/\text{kg}$ total PAHs).

Sediment from Areas A and B met the requirements for beach nourishment, as defined by the ITM and RGP-67. Both the upper and lower composites from Areas A and B were >95% sand and gravel, were free of contamination, and were not plastic. Additionally, sediment had low or no ammonia, sulfides and oil and grease, indicating that it would not have adverse aesthetic effects on the receiving beaches. This material would also meet the requirements for open-ocean disposal at LA-3, as defined by the OTM/ITM.

Sediment in Area C was comprised of either a thick layer of sand, overlying a silt layer, overlying the ancient Bay sands (in the nearshore portions of Area C) or by silts and clays overlying the ancient Bay sands (in the channel portion of Area C). Sediment in the upper composite from Area C (Comp C-U) was 77.9% sand, with 0.68% TOC. Silver and selenium were not detected in Comp C-U. All other metals were detected in Comp C-U sediments. With the exception of mercury, all metals were detected at concentrations below those of the LA-3 Reference sediment and below the ERL. Mercury was detected in Comp C-U at a concentration of 0.36 mg/kg, which is slightly above that of the LA-3 Reference site (0.10 mg/kg) and the ERL of 0.24 mg/kg, but below the ERM of 0.76 mg/kg. Pesticides, PCBs, tributyltin, TRPH, oil and grease, and phthalates were not detected in the upper Area C composite. PAHs were either undetected or were detected at very low concentrations, with total detected PAHs of 108 $\mu\text{g}/\text{kg}$, well below the ERL of 4,022 $\mu\text{g}/\text{kg}$.

Upper and lower segments of individual cores from Area C were also analyzed for mercury and sediment grain size. The upper segment from the cores in the nearshore portion of Area C was characterized as a mixture of sand and silt. Mercury concentrations ranged from undetected to 0.85 mg/kg. The upper segment of cores from the offshore portion of Area C was dominated by fine-grained silts and clays and mercury concentrations were higher, ranging from 1.11 to 3.35 mg/kg. The lower segments for both the nearshore and offshore stations were similar, dominated by sand with concentrations of mercury that were either undetected or detected at concentrations very near

the detection limit. The upper silt layer that occurred in each of the cores was 2 to 3 ft thick and comprised relatively small portion of the material in the Area C-U composite.

Sediment from the lower Area C composite was very similar to the lower composites from Areas A and B, with 99% sand and 0.05% TOC. Metals were either undetected or detected very near the detection limits. Pesticides, PCBs, tributyltin, TRPH, oil and grease, phthalates, and PAHs were not detected in the Comp C-L.

Both Area C composites were evaluated for potential biological effects related to the dredging and placement of the proposed dredged material at the LA-3 disposal site. No toxicity was observed in either of the benthic tests. Amphipod survival ranged from 87% to 92% and polychaete survival ranged from 84% to 92%. No significant differences were observed between the test treatments and the LA-3 Reference for either test. No toxicity was observed in any of the SPP exposures, with >88% survival or normal development in all test treatments for each SPP test. There were no significant differences between the 0% and 100% treatments and no calculable LC₅₀ for any of the SPP test treatments.

Mercury was not detected in any of the tissues exposed to Comp C-L or LA-3 Reference. Mercury was either undetected or detected at the detection limit (0.01 to 0.013 mg/kg) in tissues exposed to Comp C-U. The mean tissue concentrations in clams and worms exposed to Comp C-U were within 20% of the detection limit, the standard margin of error for this analytical method. The tissues concentrations of mercury were also well below the FDA limit of 1.0 mg/kg and the risk-based guidance value of 0.3 mg/kg (USEPA 2000).

Sediment from the Area C upper composite would not meet the requirement for beach nourishment, with <80% sand and gravel. However, this material would meet the requirements for open-ocean disposal. With the exception of mercury, concentrations for chemicals of potential concern were either not detected or detected at concentrations below those of the LA-3 Reference site. Mercury was detected above the ERL, but below the ERM. No significant toxicity was observed in any of the biological tests and no significant bioaccumulation of mercury was observed in the bioaccumulation tests.

Sediment from the lower Area C composite met the requirements for beach nourishment and ocean disposal. However, this layer occurs close to the proposed dredge depth of -12 ft. MLLW and it is unlikely that the layer could be easily separated from the overlying sediment during dredging.

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ACRONYMS AND ABBREVIATIONS

ARI	Analytical Resources Incorporated
ASTM	American Society for Testing and Materials
BP	bioaccumulation potential
CPT	cone penetration test
COC	chain of custody
DGPS	differential global positioning system
ERL	effects range-low
ERM	effects range-medium
GC/MS	gas chromatograph-mass spectrometry with selected ion monitoring
ICP-MS	inductively coupled plasma emissions spectrometer equipped with a mass detector
ID	identification
ITM	Inland Testing Manual
LPC	limiting permissible concentration
MLLW	mean lower low water
OTM	Ocean Testing Manual
PAH	polynuclear aromatic hydrocarbon
PCB	polychlorinated biphenyl
PEL	Probable effects level
POC	point of contact
QA/QC	quality assurance/quality control
QAP	quality assurance plan
RGP	regional general permit
SAP	sampling and analysis plan
SIM	selective ion method
SM	Standard Methods
SOP	standard operating procedure
SP	solid phase
SPP	suspended particulate phase
STFATE	Short Term Fate model
SVOC	semivolatile organic compound
TBT	tributyltin
TOC	total organic carbon
TPH	total petroleum hydrocarbon
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
NewFields	NewFields Northwest LLC.

UNITS OF MEASUREMENT

°C	degree(s) Celsius
ft	feet
µg/kg	microgram(s) per kilogram
µg/L	microgram(s) per liter
µm	micrometer(s)
ng/kg	nanogram(s) per kilogram
cm	centimeter(s)
L	liter
m	meter(s)
mg/kg	milligram(s) per kilogram
mL	milliliter(s)
mm	millimeter(s)
ppb	parts per billion
ppm	parts per million
ppt	parts per thousand
v/v	volume per volume
CY	cubic yards

1.0 INTRODUCTION

The City of Newport Beach is in the process of preparing the Environmental Impact Report (EIR) for the CEQA process and submitting permit applications in support of the Marina Park project, located on the Balboa Peninsula. The Marina Park project includes the expansion of existing beach areas and marina facilities, including the conversion of approximately 1.13 acres of uplands to a 28-slip marina. Sediment and soils throughout the proposed marina complex will be excavated to accommodate the project depth of 12 ft. MLLW plus a 2 ft. overdredge. Approximately 62,000 cubic yards (CY) of soil/sediment is proposed for removal. Approximately 5,000 CY representing the top five feet of soil in the upland area will be excavated and used for project fill and is not considered as part of the proposed dredge volume. Approximately 57,000 CY is proposed for aquatic disposal. The primary disposal options under consideration for the dredged materials are 1) beach nourishment under Regional General Permit Number 67 or individual permit for unconfined aquatic disposal as governed by the U.S. Army Corps of Engineers (USACE)/U.S. Environmental Protection Agency (USEPA) guidelines set forth in the Inland Testing Manual (ITM; USACE/USEPA 1998), and 2) ocean disposal at disposal site LA-3 based on guidance provided by the Ocean Testing Manual (OTM; USACE/USEPA 1991). Based on previous soil and sediment data collected by NewFields and Terra Costa from the site, the majority of the excavated material is expected to be available for on-site beach replenishment and expansion. It is also anticipated that a portion of the material will need to be disposed of either at the LA-3 ocean disposal site or upland, either as clean fill or as contaminated material.

The objective of this sampling and analysis program (SAP) is to characterize the dredged materials and upland excavation material from study units within the proposed marina area in the Marina Park Master Plan to determine environmental suitability for beach replenishment or ocean disposal. The material under consideration for ocean disposal will be tested based upon criteria outlined in the OTM (USEPA/USACE 1991) and the ITM (USACE/USEPA 1998).

1.1 BACKGROUND AND HISTORY

Newport Bay is a coastal embayment located adjacent to the City of Newport Beach, California. The Newport Bay area supports a variety of land uses including navigation, marine industry, private and public marinas, recreational activities, and residential uses. Upper and lower Newport Bay are estuarine and nearshore marine environments, supporting both resident and migratory fish and bird species as well as a variety of native plant species. In addition, San Diego Creek, which supports agricultural land use and provides habitat for aquatic and terrestrial ecosystems, flows into the upper reaches of Newport Bay.

The proposed Marina Park is located in Lower Newport Bay, on the bay side of the Balboa Peninsula between 15th and 18th Streets immediately north of West Balboa Boulevard (Figure 1). The site currently includes some recreational areas and mobile homes. The Marina Park Master Plan includes a 28-slip marina, a small-boat basin, and moorage for visiting vessels in the northeast corner of the site.



Figure 1. Location of Marina Park Master Plan area (dashed line) and proposed marina within Newport Bay.

1.1.1 EXISTING SOIL AND SEDIMENT CHARACTERISTICS

The Balboa Peninsula was primarily formed from sand deposits overlying Bay sediments following a series of extreme storms in the 1860's. Subsequent dredging and construction has increased the size of the peninsula. In May 2008, the City conducted a geotechnical investigation of soils at the proposed Marina Park site (Terra Costa 2008). Terra Costa conducted soil borings (B-1 and B-2) and cone penetration tests (CPT-7 and CPT-12) at two locations within the footprint of the proposed marina. The cone penetration test (CPT) evaluated sediment type, as well as other physical features. The borings included a visual description at 5 ft intervals, as well as subsampling for grain size analysis.

The geotechnical survey characterized the project soils (upland mobile-home park and beach face) as follows:

“The site is underlain by hydraulic fill, bay deposits, and older alluvial deposits beyond the depths of our deepest exploratory drilling at 50 feet. These soil and geologic units are described below in order of increasing age.

Hydraulic Fill Soils: Our test borings indicate that the project site-area is generally underlain by from 5 to 6 feet of loose to medium dense, gray-brown, damp to wet, hydraulically placed sands and silty sands (SP/SM), with occasional shell fragments. It is likely that these relatively “clean” granular soils were placed as the result of dredging during one or more phases of the development of Newport Harbor. SPT blow counts within these artificially placed dry to saturated sands ranged from 7 to 25 blows per foot.

Bay Deposits: The hydraulic fill sands are typically underlain by a 2- to 2 ½ - foot-thick soft to firm compressible sandy silt to silt clay bay mud, which is in turn underlain by relatively clean, medium dense, gray sands (SP/SM), with shells and shell fragments, characteristic of Holocene-age bay deposits below an elevation of approximately -2 to -3 feet. SPT blow counts within these clean, saturated, natural bay deposit sands range from 13 to 24 blows per foot.”

The Bay Deposits extend to approximately project depth at -14 ft. MLLW. Groundwater elevations appeared to match tidal elevations in the Bay. A subsample of porewater from the borings indicated that the groundwater was at least 20%. Samples may have been compromised by freshwater added to the sample hole used to facilitate the boring. Grain size analysis of the soil borings resulted in a similar characterization, with sand dominating throughout the area (Table 1-1).

Based on the results of the geotechnical investigation, the soils underlying the mobile-home park and neighboring beach are comprised of sand to silty sand, with shell fragments. Soils were either hydraulically-placed from dredging events, the result of deposition following historic storm events, or are Holocene-era sediments, representative of soils underlying much of Lower Newport Bay.

The sediments occupying the intertidal and subtidal portion of the proposed marina were characterized during a recent evaluation of West Lido Channel (Figure 2; Table 1-2). Marine sediments in the area appeared to be comprised of either all sand at the shallower stations (-6 to -8 ft. MLLW) or more recent deposits of fine-grained sediment overlying sand in the deeper stations (-10 to -15 ft. MLLW). While the surface material was determined to be too fine-grained to qualify for beach nourishment, the underlying sand appeared to be a distinctly different stratigraphic layer and would likely qualify for beach nourishment.

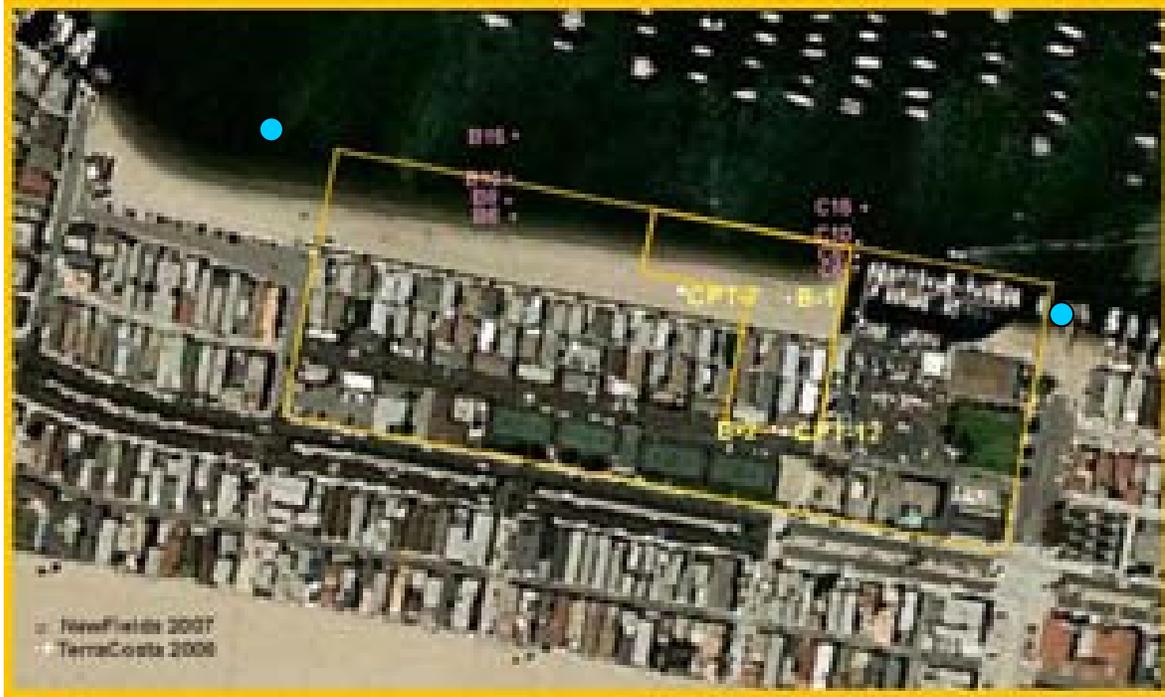


Figure 2. Locations of recent samples collected near the proposed marina. Existing stormwater outfalls denoted by blue circles.

1.1.2 CHEMICAL EVALUATIONS OF EXISTING SOILS AND SEDIMENTS

Concentrations of contaminants of concern were evaluated for the soils collected in borings B-1 and B-2, as well as the sediments in the neighboring channel areas (NewFields 2007).

The soil borings were evaluated for metals and DDT and associated breakdown products (Table 1), contaminants of concern that have been found in other portions of Newport Bay. Metals were present very near or below the detection limits and DDT, DDE, and DDD were undetected in both soil borings.

Marine sediments sampled in the subtidal portion of the proposed marina were evaluated for EPA priority pollutants (metals, petroleum aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), chlorinated pesticides, and organotins) and did not show detected contaminants of concern, with the exception of mercury. Mercury was detected in some of the stations at concentrations exceeding the ERM (Long et.al. 1995). These concentrations appeared to be associated with the more recent, finer-grained material at the surface. Samples that were predominantly sand had lower mercury concentrations. The differences between the physical and chemical profiles of the surface and subsurface materials suggests evaluating the marine portion of this site as two separate upper and lower composites.

Locations of current stormwater outfalls are indicated in Figure 2. Land use of the site has been limited to residential activities and to the City's knowledge there are no reported major spills on the site.

Table 1-1. Data for soil/sediment samples at Marina Park, May 2008.

Analyte	Units	B-1					B-2			
Depth below surface	ft	5	10	15	20	25	5	10	20	30
Gravel	%	1.0	0.0	1.0	0.0	5.0	11.0	1.0	2.0	0.0
Sand	%	92.7	97.2	98.2	96.0	93.0	84.1	98.5	96.6	97.8
Silt & Clay	%	6.3	2.8	0.8	4.0	2.0	4.9	0.5	1.4	2.2
Analyte	Units	Composite					Surface	Subsurface		
4,4'-DDE	µg/kg	<2.0 U					<2.0 U	<1.9 U		
4,4'-DDD	µg/kg	<2.0 U					<2.0 U	<1.9 U		
4,4'-DDT	µg/kg	<2.0 U					<2.0 U	<1.9 U		
2,4'-DDT	µg/kg	<2.0 U					<2.0 U	<1.9 U		
2,4'-DDE	µg/kg	<2.0 U					<2.0 U	<1.9 U		
2,4'-DDD	µg/kg	<2.0 U					<2.0 U	<1.9 U		
Arsenic	mg/kg	<6 U					<6 U	<6 U		
Cadmium	mg/kg	<0.2 U					<0.2 U	<0.2 U		
Chromium	mg/kg	3.4					1.6	3.0		
Copper	mg/kg	3.6					2.8	1.2		
Lead	mg/kg	<2 U					<2 U	<2 U		
Mercury	mg/kg	<0.05 U					<0.04 U	<0.06 U		
Nickel	mg/kg	2					<1 U	<1 U		
Silver	mg/kg	<0.3 U					<0.3 U	<0.3 U		
Zinc	mg/kg	9					3	4		

Table 1-2. Nearshore sediment data, September 2007.

Sample	Water Depth (ft below MLLW)	Core Depth (ft below MLLW)	Gravel & Sand (%)	Silt & Clay (%)	Mercury (µg/kg)
C6	5.4	7.7	97.0	3.0	0.11
C8	7.7	9.5	96.8	3.2	0.23
C10	9.9	11.7	67.3	32.7	2.60
C15	13.1	15.6	25.9	74.1	3.33
B6	6.1	8.7	86.8	13.2	0.37
B8	8.0	11.2	75.4	24.6	3.09
B10	11.6	14.1	70.9	29.1	2.22
B15	13.1	16.4	27.2	72.8	2.30

2 METHODS

The objective of this sampling and analysis program (SAP) was to characterize the proposed excavated and dredged materials in the proposed Marina Park marina to evaluate environmental suitability for beach nourishment and/or ocean disposal. Material under consideration for beach nourishment was tested based on criteria in the ITM (USACE/USEPA 1998) and requirements under Regional General Permit Number 67 for physical appearance, composition, and chemical concentrations. The material under consideration for ocean disposal was tested based upon criteria outlined in the OTM (USEPA/USACE 1991). Dredged material for ocean disposal from this project is proposed for disposal at the USEPA-designated LA-3 disposal site. Chemical and biological analysis were conducted with reference sediment concurrent to the test sediment evaluations.

2.1 DEFINITION OF AREAS AND SAMPLE LOCATIONS

Core samples were collected from the upland and aquatic areas of the site to a depth of -12 ft MLLW (+2 ft overdredge) as shown in Figure 3. The project footprint was divided into three dredged material management areas, A, B, and C (Figures 2 and 3). Area A included that portion of the site currently occupied by the mobile home park. Area B included that area currently occupied by the exposed beach above 0 ft MLLW. Area C included that portion of the site that is below 0 ft. MLLW.

Five stations were sampled in Area A. The upper 5 ft. of soil from each Area A station was not included in this investigation, as the upper 5 ft. of soil within the mobile home park will be used as fill material during park construction. Each of the five cores was approximately 20 ft. in length, extending from approximately +5 ft. MLLW to -15 ft. MLLW. The estimated volume of proposed dredged material from Area A is 21,328 cy with 2,370 cy of overdredge.

Four stations were sampled for Area B. The entire core from each Area B stations was evaluated for aquatic disposal. Cores ranged from 15 to 21 ft in length, extending from the beach face (between +1 ft. MLLW and +6 ft. MLLW) to project depth. The estimated volume of proposed dredged material from Area B is 13,869 cy with 2,849 cy of overdredge.

Seven stations were sampled for Area C. Cores ranged from 5 to 14 ft in length, extending from the sediment surface (between -1 ft. MLLW and - 10 ft. MLLW) to project depth. The estimated volume of proposed dredged material from Area C is 13,713 cy with 4,571 cy of overdredge.

As noted above, each of the cores was divided into an upper and lower section. For Areas A and B, that division was based on the transition from hydraulic fill material to historic Bay deposits. That layer generally occurred between 10 to 12 ft. below ground surface. For Area C, cores were based on apparent grain size with the upper composite representing the more recently deposited fine sediments and the lower composite representing coarser ancient Bay deposits. Each of the upper cores within an area was combined into an upper composite and each of the lower cores within an area will be combined into a lower Area composite. A more complete description of each core is provided in Section 3.1.

A sample of the “z-layer” was collected for each core. Z-layer samples include sediment from the 6” segment immediately underlying the proposed dredged material and are intended to represent the exposed sediment face once the dredging is completed. For this project, the Z-layer is comprised of material from -14 ft. MLLW to -14.5 ft. MLLW. Z-layer samples from each of the Area A and Area B cores were combined into one composite sample. Where possible, z-layer samples were collected from each core collected in Area C.

Sediment was also collected from the LA-3 Reference site. The reference sediment provides a point of comparison for material proposed for disposal at the LA-3 ocean disposal site. The coordinates for the LA-3 Reference collection site were as follows:

Latitude: 31° 31.70" N
Longitude: 117 ° 51.30" W

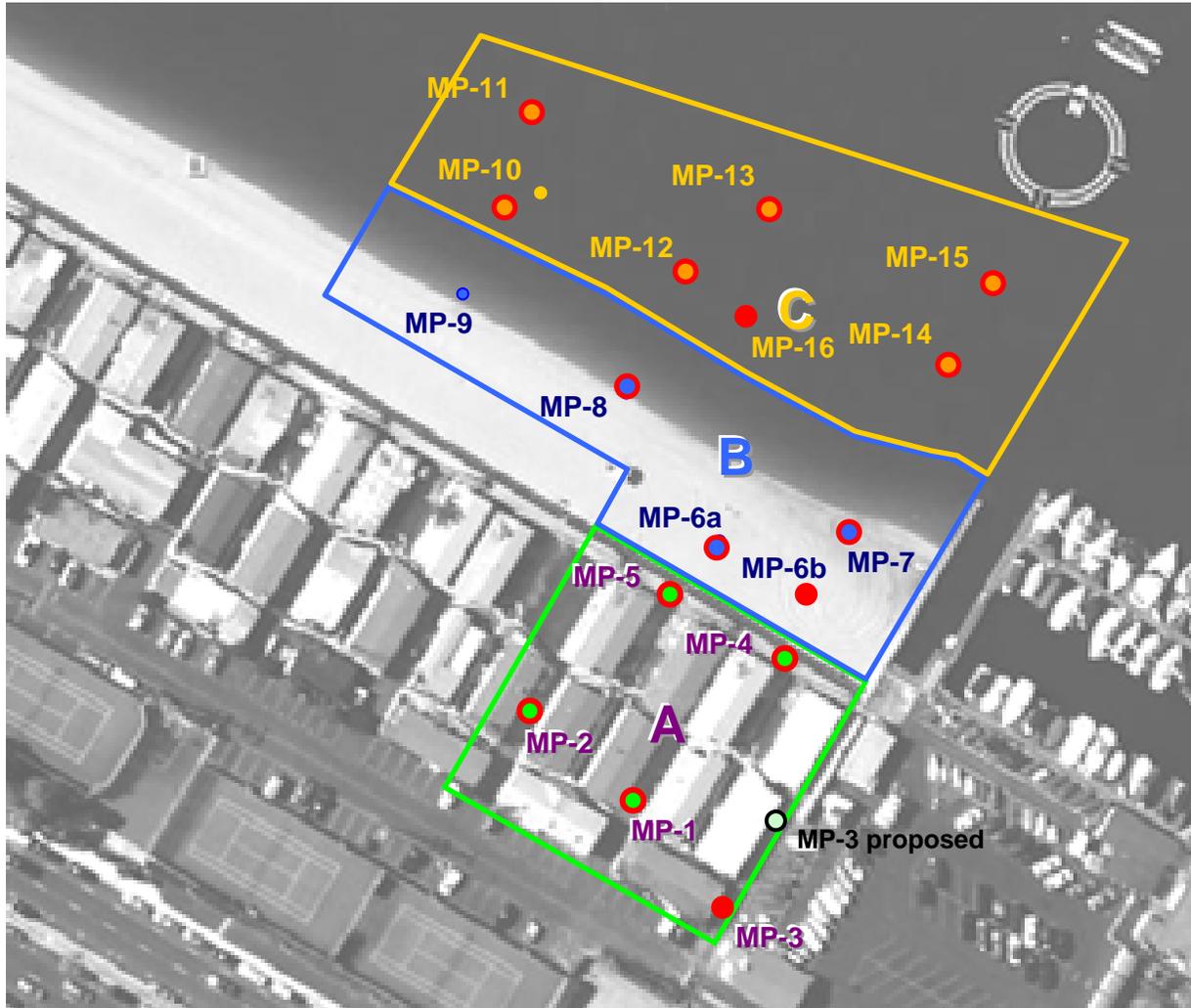


Figure 3. Area and Station Locations. Proposed locations denoted by green, blue and orange symbols. Actual locations denoted by red symbols.

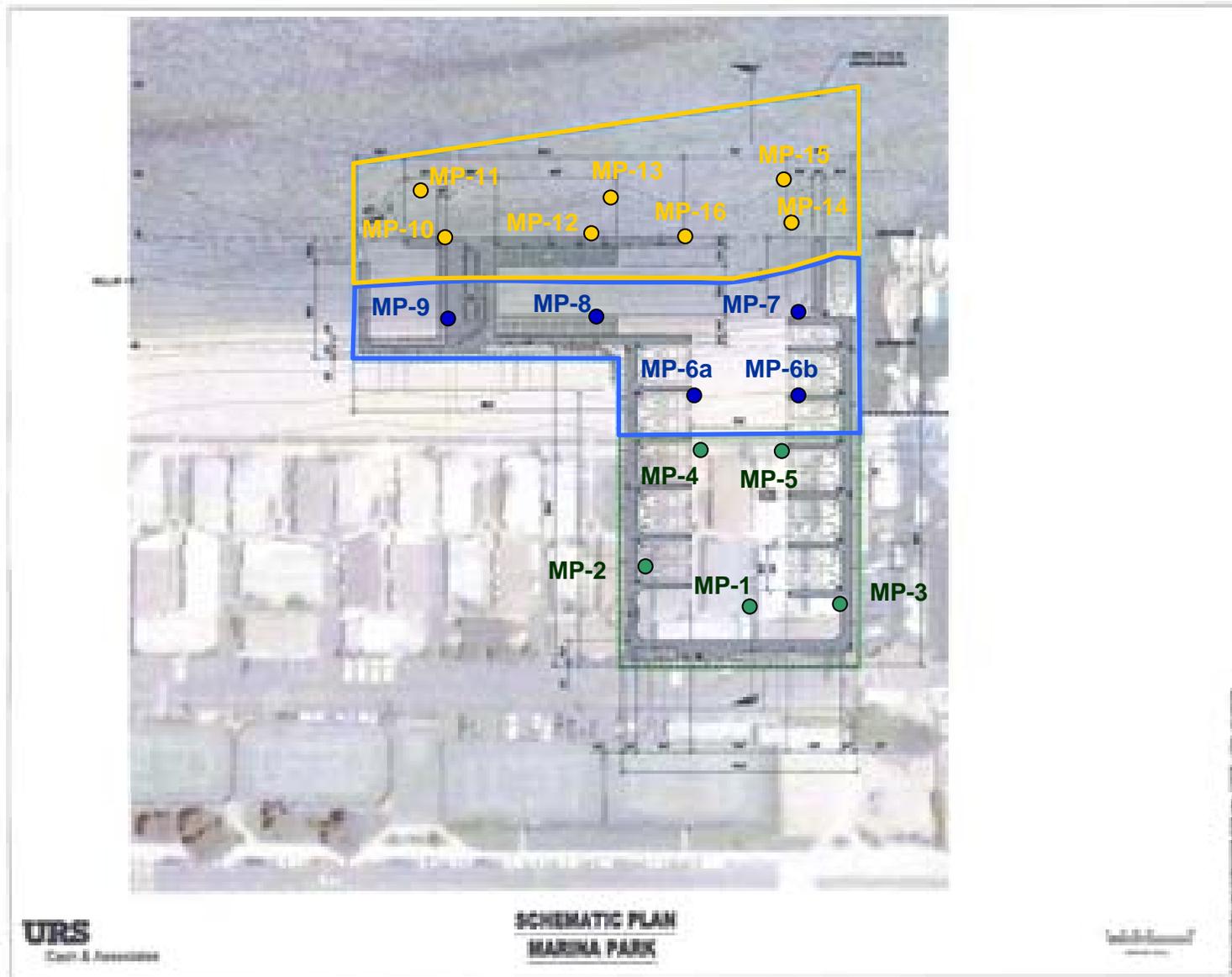


Figure 4. Project Areas and Station Locations with Proposed Project Plan and Current Bathymetry

2.2 OVERVIEW OF ANALYSES

Upper and lower composite samples from Areas A and B were analyzed for sediment grain size, total organic carbon, sediment conventionals, and sediment chemistry. The upper and lower composite samples from Area C were analyzed for sediment chemistry, as well as biological testing for toxicity and bioaccumulation. In addition, subsamples from the upper and lower segment of each individual core within Area C were analyzed for sediment grain size and mercury. Z-layer samples were archived for possible future analysis depending upon the dredged material evaluation.

Sediment grain size is critical to beach nourishment suitability determinations. Each composite and the reference sediment were processed for sediment conventionals (total solids, sediment grain size and total organic carbon), aesthetics (oil and grease, total recoverable petroleum hydrocarbons (TRPH) sulfides, and ammonia), and for plasticity (Atterberg test).

Chemical analysis was performed on each of the six test composites, as well as the LA-3 reference sediment. Chemical analysis of the test and reference material for each study unit included metals, organotins, chlorinated pesticides, PCBs, PAHs, and phthalates. Upper and lower portions of each individual core from the Area C composites were analyzed for sediment grain size and mercury. All analyses were performed following USEPA and USACE guidelines for beach nourishment and for ocean disposal (USEPA/USACE 1991, 1998). Subsamples of sediment from each station were also frozen for archive in case future chemical analysis is required on individual stations.

The two marine composites (C-upper and C-lower) were evaluated for potential biological effects related to the dredging and placement of the proposed dredged material at LA-3. Solid-phase tests provided an estimate of toxicity to benthic organisms at the disposal site. Benthic tests included 10-day acute tests with the amphipod, *Ampelisca abdita* and the polychaete, *Neanthes arenaceodentata*. Water-column tests were conducted with the suspended-particulate phase (SPP) to provide an estimate of toxicity to water column organisms exposed to sediment as it falls through the water column at the disposal site. It also provided an indication of water-column toxicity that might be encountered during the dredging process. SPP is the liquid portion of a 1:4 sediment/seawater slurry that is designed to simulate the dredging process. Water-column tests were conducted with a dilution series of 10%, 50%, and 100% SPP for each of the test composites. A 1% dilution was also tested during the larval exposures. Reference sediments are not included in the SPP test. SPP tests were conducted with the fish, *Menidia beryllina*, the mysid, *A. bahia*, and larval mussels (*Mytilus* sp.).

Bioaccumulation potential testing was performed on materials proposed for open ocean disposal. The bioaccumulation potential test was performed with a clam, *Macoma nasuta*, and a polychaete worm, *Nephtys caecoides*. The chemistry analyte list for these tissues was determined by sediment chemistry results.

2.3 FIELD COLLECTION PROGRAM FOR SOIL/SEDIMENT CORE SAMPLES

The sampling design designated 15 stations for the collection of soil or sediment core samples within the three proposed study units. Marine sediment cores were collected with a vibracorer; upland soil/sediment coring was conducted by Gregg Drilling using continuous direct push coring. All core samples targeted a project depth of -12 ft MLLW (+2 ft overdredge).

2.3.1 SAMPLING LOCATIONS AND DEPTHS

Each station was given a unique identification code (MP-1 through 16). For the purposes of sample identification, stations were numbered sequentially. All study unit composites were denoted with the identifier “Comp” combined with the abbreviation for that study unit and a U or L denoting upper and lower composites. Composite titles were as follows:

Table 2-1. Sample Designations for Chemical and Biological Analysis

Study Unit	Sample Designation	
	Upper Composite	Lower Composite
Upland	Comp A-U	Comp A-L
Upland Beach	Comp B-U	Comp B-L
Marine Aquatic	Comp C-U	Comp C-L

The area and station identification numbers, approximate depths, and proposed compositing strategy are provided in Table 2-2.

Table 2-2. Station Designations within Each Area, Marina Park 2008

Area A Stations	Elevation / Water Depth (ft. MLLW)	Area B Stations	Elevation / Water Depth (ft. MLLW)	Area C Stations	Elevation / Water Depth (ft. MLLW)
MP-1	+9-10	MP-6a	+7-8	MP-10	-4
MP-2	+9-10	MP-6b	+7-8	MP-11	-9
MP-3	+9-10	MP-7	+3	MP-12	-5
MP-4	+9-10	MP-8	+3	MP-13	-8
MP-5	+9-10	MP-9	+3	MP-14	-7
				MP-15	-8
				MP-16	-5

2.4 SEDIMENT SAMPLING

Samples collected above 0 ft. MLLW were obtained by Gregg Drilling & Testing, Inc using a direct push coring technique. Marine sediment below 0 ft. MLLW was collected by NewFields and Weston staff using a vibracore sampler to obtain samples to project depth.

In addition to the project sediment, a reference sediment sample was collected from the USACE-USEPA approved reference sediment sampling location for LA-3. Reference sediment was collected using a stainless-steel dredge bucket. Control sediment was provided with the bioassay test organisms where appropriate (i.e., SPP tests do not use a control sediment). A sample of site water (approximately 100 L) was also collected from the Marina Park area for use in the 100% SPP concentrations for the SPP tests.

2.4.1 CORE COLLECTION

Upland cores were collected using a Warthog M1.5T track mounted drill rig in direct push mode (Figure 5). Cores were collected to project depth (+2 ft overdredge and 6" z-layer). Separate acetate liners were used for each core sample. Samples were collected in 4 ft. sections and the cut into 2 ft. sections and placed into a cooler. Samples were processed in the laboratory.

Marine sediment cores were collected using a 4-inch diameter vibracore deployed from a 25 ft. barge that allowed for sample collection in shallow nearshore waters. The vibracore is an aluminum tube attached to a vibrating head. A liner is inserted into the core barrel in order to keep the sample from coming in contact with the aluminum barrel. Once aboard the vessel, the core liner was removed from the corer and the core was characterized for length and geotechnical characteristics.

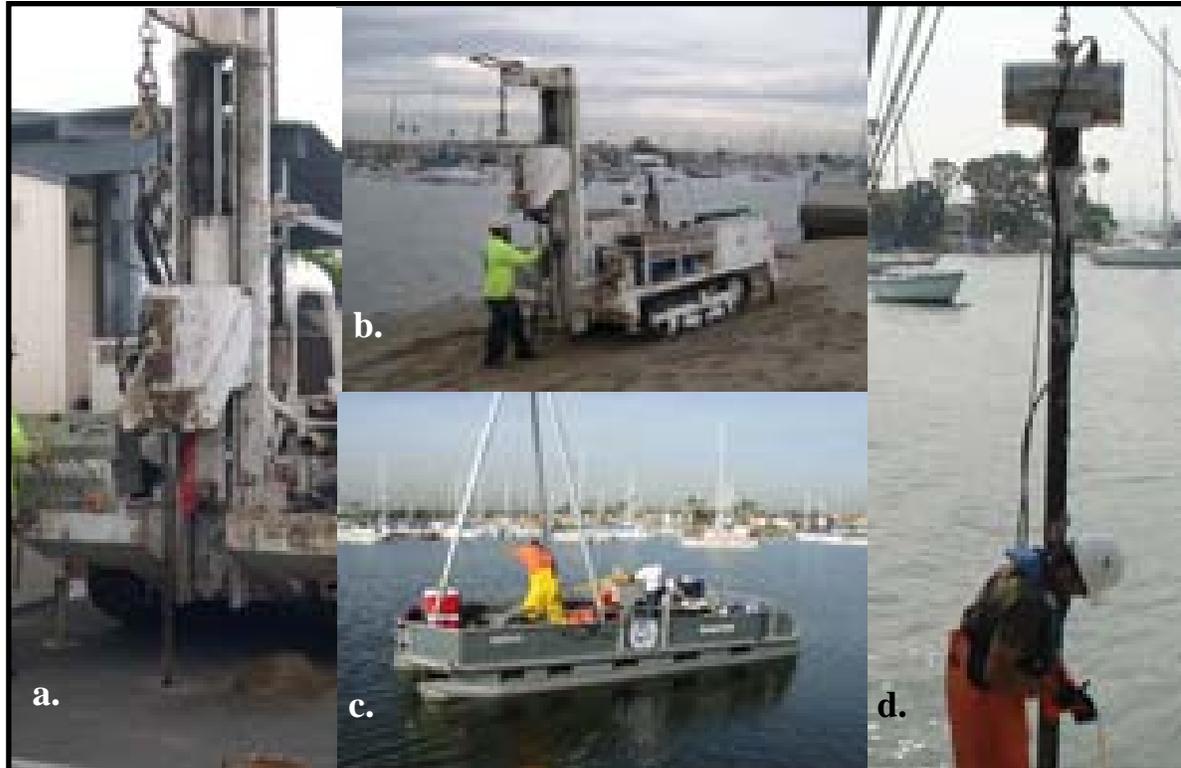


Figure 5. Direct-push CPT (a,b) and Vibracore (c, d) samplers, Marina Park 2008

2.4.2 NAVIGATION

Locations were determined using a combination of Global Positioning System (dGPS) and triangulation using visual landmarks and water depth. Actual sampling locations were recorded in the field logs.

2.4.3 CORE HANDLING

A representative core from each sample location was photographed and characterized for sediment characteristics. The core stratigraphy and other pertinent data and observations were logged. Each core was split into separate upper and lower samples for analysis based on sediment composition as described previously. The geologic description of each core included the apparent grain size, odor, color, length, and any evident stratification of the sediment.

Sediment from each station was placed into clean, food-grade-quality plastic bags, labeled (project name, date, sampler ID, analysis, and preservative where applicable), logged into a field chain-of-custody (COC) form, and placed into a cooler. Cores remained on ice and in the dark until shipped via overnight delivery service to the NewFields' laboratory in Port Gamble, Washington for processing.

2.4.4 SAMPLE PROCESSING AND STORAGE

Sample processing and composting was performed at NewFields' Port Gamble laboratory. Station samples were stored in the dark at 4 degrees Celsius (°C) until processed. Each station sample was homogenized to a uniform consistency at the laboratory using stainless steel spoons. Composites were generated by homogenizing all station samples from a given area as described in Section 2.1. Samples for physical and chemical analysis were placed into certified clean glass jars with Teflon-lined lids and shipped to the analytical laboratories. Sub-samples for archive were placed in certified clean glass jars with Teflon-lined lids and frozen at -20°C for possible future chemical analysis in the event that further delineation of chemical contamination is required. The remainder of the composite sample was analyzed for toxicity or, in the case of Composites A and B, stored at 4°C in case biological testing is determined to be needed.

2.4.5 SHIPPING

Prior to shipping, sample containers were placed in sealable plastic bags and securely packed inside coolers with ice packs or crushed ice. COC forms were filled out, and the original signed COC forms was placed in a sealable plastic bag and placed inside the cooler. The cooler lids were securely taped shut.

Samples were delivered to the analytical laboratories. Table 2-3 lists the laboratories, the particular analyses performed by each, and the point of contact and pertinent shipping information for each laboratory.

Table 2-3. Analytical Laboratories, Points of Contact, and Shipping Information

Laboratory	Analyses Performed	Point of Contact	Shipping Information
NewFields Northwest LLC.	SPP, SP testing and Bioaccumulation testing	Mr. William Gardiner Mr. Brian Hester (360) 297-6040	NewFields Northwest 4729 NE View Drive Port Gamble, WA 98364
Analytical Resources Inc	Sediment and bioaccumulation tissue chemistry	Ms. Sue Dunnihoo (206) 695-6200	Analytical Resources 4611 S.134 th Pl, Suite 100 Tukwila, WA 98168

2.4.6 DECONTAMINATION OF FIELD AND LABORATORY EQUIPMENT

All coring equipment was cleaned prior to sampling. Between marine stations, core barrels and the deck of the vessel was rinsed with site water. Core tubes were cleaned between cores using biodegradable soap, a site water rinse and a deionized water rinse. Before creating each composite, all stainless steel utensils (stainless steel bowls, spoons, spatulas, mixers, and other utensils) were cleaned with soapy water, rinsed with tap water, and then rinsed three times with deionized water.

2.5 BIOASSAY TESTING

Samples were evaluated in accordance with procedures outlined in the OTM (USEPA/USACE 1991) to establish suitability for ocean disposal and the more recent procedures described in the Inland Testing Manual (ITM; USEPA and USACE 1998) and by the ASTM (2003a). This program included bioassay analysis of three project samples: two Area C composite samples and the LA-3 Reference sediment. In addition, appropriate laboratory control samples were run with each of the selected test species. Bioassay testing for this project consisted of two benthic toxicity tests, three water-column toxicity tests, and two bioaccumulation potential tests. The bioassays performed for this project are summarized in Table 2-4. Bioassay testing of materials began as soon as possible after the time of collection.

Table 2-4. Bioassay Testing Proposed for Suitability Evaluations of Dredged Material

Test Type	Type of Organism	Taxon	Project Sediments	Control Sediment/ Seawater	Reference ¹ Sediment	Reference ¹ Toxicant
Water column	Bivalve larvae	<i>Mytilus edulis</i>	X ²	X		X
	Fish	<i>Menidia beryllina</i>	X ²	X		X
	Mysid shrimp	<i>Americamysis bahia</i>	X ²	X		X
Benthic	Amphipod	<i>Ampelisca abdita</i>	X	X	X	X
	Polychaete	<i>N. arenaceodentata</i>	X	X	X	X
Bioaccumulation	Bivalve	<i>Macoma nasuta</i>	X	X	X	
	Polychaete	<i>Nephtys caecoides</i>	X	X	X	

¹Shaded areas indicate tests or treatments that are not applicable to the selected tests.

² Sediment elutriates of project material

2.5.1 BENTHIC TOXICITY TESTS

Benthic bioassays were performed to estimate the potential impact of ocean disposal of dredged material on benthic organisms that attempt to re-colonize the area. Dredge material was tested in 10-day benthic tests using two species: an amphipod species *Ampelisca abdita* and a polychaete, *Neanthes arenaceodentata*. Amphipod tests were conducted in accordance with procedures described in Appendix E of the ITM (USEPA/USACE 1998) and ASTM Standard E1367-99 (ASTM 2003c). Tests with the polychaete were conducted in accordance with procedures outlined in the ITM (USEPA/USACE 1998). Each sediment type (test, references, and control) was run with five replicates. Control sediment was sediment from the area where the organisms were collected (i.e., native sediment). Since *N. arenaceodentata* are cultured in the absence of sediment, clean sand from Newport, Oregon was used as control sediment for the 10-day polychaete test. This sediment has been used successfully in previous tests with *Neanthes*.

Test organisms were exposed to the sediment for ten days in 1-liter glass test chambers. Two centimeters of sediment (approximately 150 mL) was placed into each chamber with 800 mL of overlying water. Tests were conducted as static tests with no feeding. Initial stocking densities in each replicate were 20 organisms per test chamber for the amphipod test, and 5 organisms per test chamber

for the polychaete test. Trickle-flow aeration was provided through glass pipettes, in such a way as to avoid disturbing the sediment surface. Water quality measurements were taken in one chamber from each test treatment daily and included pH, salinity, temperature, and dissolved oxygen. Ammonia was measured in both interstitial (pore water) and overlying water at the start and finish of the test from one replicate for each test sample. Sediment pore water was extracted via centrifugation. All instruments used were calibrated and logged daily. Using methods described in the OTM (USEPA/USACE 1991) the sediments were carefully sieved to remove the test organisms and then survivorship was assessed. To evaluate the relative sensitivity of the organisms, reference toxicity tests were performed using standard reference toxicants (Lee 1980).

2.5.2 WATER-COLUMN TESTS

Water column bioassay tests were performed to estimate the potential impact of ocean disposal of dredged material to organisms that live in the water column. The water-column test was performed using a 4:1 seawater to test dredged material suspended-particulate phase preparation (SPP). To make the SPP, dredged material from each composite was combined with dredging-area site seawater in a 4:1 ratio by volume, vigorously agitated for 30 minutes, and then centrifuged for approximately 10 min. at room temperature (16–18°C). Following centrifugation, the supernatant was gently decanted. This supernatant represented the 100% SPP test concentration and was used to create serial dilutions with clean seawater (0.45- μ m-filtered Hood Canal seawater) to create subsequent test concentrations for the SPP tests. Three species were tested with the SPP: *Menidia beryllina* (inland silverside fish), *Americamysis* (formerly *Mysidopsis*) *bahia* (mysid shrimp), and *Mytilus* sp. (bivalve larvae).

For the shrimp and the fish, the SPP was tested at 100%, 50%, and 10% percent concentrations against a seawater control under static conditions. Each of these tests was conducted in accordance with procedures outlined in the ITM (USEPA/USACE 1998). Ten animals were used per replicate with five replicates per elutriate concentration. The test ran for 96 hours.

The bivalve larvae test was run on the test dredged material elutriates at 100%, 50%, 10%, and 1% dilutions, and a seawater control. The test was run for 48 hours, until development of the bivalve larvae to the D-hinge stage in the control. At the termination of the study, survival and normal development were compared between the control and test groups to determine if significant mortality or abnormal development existed.

Daily water quality monitoring of test chambers was carried out for pH, dissolved oxygen, salinity, and temperature. Ammonia was analyzed at the start of the test in the 100% concentration. Measurements in other concentrations were not performed as the readings in the 100% concentration were not greater than 4 mg/L total ammonia. To evaluate the relative sensitivity of the organisms, reference toxicity tests were performed using standard reference toxicants (Lee 1980).

2.5.3 BIOACCUMULATION POTENTIAL TESTS

Assessment of bioaccumulation potential was carried out using the polychaete worm *N. caecoides* and the bivalve *M. nasuta* over a 28-day test period on the marine composite samples and the LA-3 Reference sediment only. Bioaccumulation potential tests were conducted in accordance with those procedures outlined in *Guidance Manual: Bedded Sediment Bioaccumulation Tests* (USEPA 1993) and Appendix E of the ITM (USEPA/USACE 1998). Each of these tests was initiated using test and control sediment in the same manner as the 10-day benthic test. *N. caecoides* exposures were conducted using 60 animals in each of five replicate test chambers. For *M. nasuta* exposures, 25 animals were placed in each of five replicate test chambers. The test chambers were maintained under flow-through conditions, and daily water quality measurements were taken on each chamber. On Day 28, the sediment was sieved to remove the worms and clams. The surviving animals were placed in clean flow-through

aquaria to purge their gut contents for 24 hours, and then tissues were placed into certified-clean glass sample jars, frozen and then sent to the chemistry laboratory for tissue analysis

The analysis of bioaccumulation was made by statistically comparing tissue levels from the reference group to those of the test group for each species. The analysis will be conducted using Analysis of Variance, T-test, or non-parametric tests, depending on the assumptions of the individual tests (i.e., homogeneity of variance) as specified in the OTM (USEPA/USACE 1991). Contaminant concentrations found to be significantly elevated above reference were interpreted by comparing to FDA limits and USEPA risk-based guidance values.

2.5.4 SEAWATER FOR BIOASSAY TESTING

Seawater used in this study, including the flow-through tests, came from the Hood Canal at Port Gamble, Washington. Hood Canal seawater is continuously pumped through the NewFields facility. Seawater is filtered using a 25 µm sand filter, with subsequent polishing with a 0.45-µm filter for the toxicity tests. This seawater source has been used successfully on similar bioassay testing programs. Extensive testing on a variety of test species has shown that there is no significant potential for toxicity or bioaccumulation from this source.

2.6 QUALITY ASSURANCE/QUALITY CONTROL

The quality assurance objectives for toxicity testing are detailed in the OTM (USEPA/USACE 1991), ITM (USEPA/USACE 1998), and NewFields' laboratory quality assurance plans (QAPs). These objectives for accuracy and precision involve all aspects of the testing process, including the following:

- Water and sediment sampling and handling
- Source and condition of test organisms
- Condition of equipment
- Test conditions
- Instrument calibration
- Use of reference toxicants
- Record keeping
- Data evaluation

Each test organism was evaluated in reference toxicant tests during the test period to establish the sensitivity of the test organisms. The reference toxicant LC₅₀ or EC₅₀ should fall within two standard deviations of the historical laboratory mean. Water quality measurements were monitored to ensure that they fall within target limits. All limits established for this program meet or exceed those recommended by USEPA.

The methods employed in every phase of the toxicity testing program are detailed in NewFields' Standard Operating Practices (SOP). All NewFields staff members receive regular, documented training in all SOPs and test methods. Finally, all data collected and produced as a result of these analyses were recorded on approved data sheets, which are part of the permanent data record of the program. If any aspect of a test deviated from protocol, the test was evaluated to determine whether it was valid according to the regulatory agencies responsible for approval of the proposed permitting action.

2.7 PHYSICAL AND CHEMICAL ANALYSIS

Physical and chemical parameters measured in this testing program were selected to provide data on potential chemicals of concern in the dredged material from the Marina Park site, in accordance with the OTM (USEPA/USACE 1991), ITM (USEPA/USACE 1998), and regional guidance. Test composites and reference sediment were analyzed for all of the analytes listed in Table 2-5. The target detection limits (sediment – dry weight) are also presented in Table 2-5. All analytical methods used to obtain contaminant concentrations follow EPA or Standard Methods (SM; APHA/AWWA 1998).

2.7.1 PHYSICAL ANALYSES

To characterize the physical properties of the sediment, tests were performed to determine the physical characteristics of the sediment for potential beach nourishment, to predict the behavior of sediment after disposal, and to compare reference and test sediment. Physical-chemical analyses of the sediment included grain size, specific gravity, total organic carbon (TOC), total solids, and plasticity (Atterberg Limits). Grain size was analyzed to determine the general size classes that make up the sediment (e.g., gravel, sand, silt, and clay) and the frequency distribution of the size ranges (reported in millimeters [mm]). Grain size measurements were conducted using the gravimetric procedure described in Plumb (1981). The TOC, made up of volatile and nonvolatile organic compounds, was determined as recommended in the OTM (USEPA/USACE 1991) or equivalent (modified SW846). This procedure involves dissolving inorganic carbon (carbonates and bicarbonates) with hydrochloric acid or sulfuric acid prior to TOC analysis (Plumb 1981). Total solids were also measured to convert concentrations of the chemical parameters from a wet-weight to a dry-weight basis. Percent solids was determined by USEPA Method 160.3 (USEPA 2001). Total petroleum hydrocarbons and total residual petroleum hydrocarbons (TRPH) were analyzed using EPA Method 1664. Atterberg limits were determined using ASTM D-4318.

2.7.2 SEDIMENT CHEMISTRY

The following analyses were performed as recommended by the ITM/OTM (USEPA/USACE 1998; 1991). The analysis for priority pollutant metals was conducted using an inductively coupled plasma emissions spectrometer equipped with a mass detector (ICP-MS), in accordance with USEPA 6010. Mercury analysis was conducted using cold vapor atomic absorption (CVAA) using EPA 7471A (USEPA 1994). The ammonia and dissolved sulfides analysis were conducted in conjunction with toxicity testing and followed SM4500-NH₃F and N (APHA/AWWA 1998). Total sulfides were analyzed following PSEP (1986).

Semivolatile organics (SVOC; PAHs only) were analyzed using gas chromatography-mass spectrometry with selected ion monitoring (GC/MS SIM), using USEPA Method 8270 SIM (USEPA 2001). This followed serial extraction with methylene chloride and alumina cleanup procedures. Organochlorine pesticides and PCBs were analyzed using dual column GC/ECD following USEPA Method 8081 and 8082 respectively (USEPA 2001), with extraction modifications to reach lower detection limits. The PCBs were identified to the Aroclor level. The analytical method used to determine TBT involves methylene chloride extraction, followed by Grignard derivatization and analyzed by GC/MS (Krone et al., 1989).

Table 2-5. Chemical and Physical Parameters, Analytical Methods, and Target Detection Limits

Parameter	Method	Procedure	Sediment Target Reporting Limit (dry weight)	Tissue Target Reporting Limit (wet weight)
Physical / Conventional Tests				
Grain Size	Plumb (1981)	Sieve/Pipette	1.0%	n/a
Atterberg Limits	ASTM D-4318			n/a
TOC	ASTM D2579	Combustion IR	0.1%	n/a
Percent Solids	EPA 160.3	Gravimetric	0.1%	n/a
Sulfides	PSEP 1986	Colorimetric	1.0 mg/kg	n/a
Oil and Grease	EPA 1664*	Gravimetric		n/a
TRPH	EPA 1664*	Gravimetric		n/a
Ammonia	SM 4500N H3F	ICP-MS	0.001 mg/kg	n/a
Lipids	Bligh Dyer	Gravimetric	n/a	0.1%
Metals				
Arsenic (As)	USEPA 6010	ICP-MS	0.5 mg/kg	n/a
Cadmium (Cd)	USEPA 6010	ICP-MS	0.2 mg/kg	n/a
Chromium (Cr)	USEPA 6010	ICP-MS	0.5 mg/kg	n/a
Copper (Cu)	USEPA 6010	ICP-MS	0.5 mg/kg	n/a
Lead (Pb)	USEPA 6010	ICP-MS	1.0 mg/kg	n/a
Mercury (Hg)	USEPA 7471A	CVAA	0.05 mg/kg	0.01 mg/kg
Nickel (Ni)	USEPA 6010	ICP-MS	0.5 mg/kg	n/a
Selenium (Se)	USEPA 6010	ICP-MS	0.5 mg/kg	n/a
Silver (Ag)	USEPA 6010	ICP-MS	0.5 mg/kg	n/a
Zinc (Zn)	USEPA 6010	ICP-MS	4 mg/kg	n/a
Pesticides				
4-4' DDD	USEPA 8081	GC/ECD	2 µg/kg	n/a
4-4'-DDE	USEPA 8081	GC/ECD	2 µg/kg	n/a
4-4'-DDT	USEPA 8081	GC/ECD	2 µg/kg	n/a
2-4' DDD	USEPA 8081	GC/ECD	2 µg/kg	n/a
2-4'-DDE	USEPA 8081	GC/ECD	2 µg/kg	n/a
2-4'-DDT	USEPA 8081	GC/ECD	2 µg/kg	n/a
Aldrin	USEPA 8081	GC/ECD	1 µg/kg	n/a
α-BHC	USEPA 8081	GC/ECD	1 µg/kg	n/a
β-BHC	USEPA 8081	GC/ECD	1 µg/kg	n/a
Chlordane	USEPA 8081	GC/ECD	2 µg/kg	n/a
δ-BHC	USEPA 8081	GC/ECD	1 µg/kg	n/a
Dieldrin	USEPA 8081	GC/ECD	2 µg/kg	n/a
Endosulfan I	USEPA 8081	GC/ECD	1 µg/kg	n/a
Endosulfan II	USEPA 8081	GC/ECD	2 µg/kg	n/a
Endosulfan Sulfate	USEPA 8081	GC/ECD	1 µg/kg	n/a
Endrin	USEPA 8081	GC/ECD	1 µg/kg	n/a
Endrin Aldehyde	USEPA 8081	GC/ECD	1 µg/kg	n/a
Heptachlor	USEPA 8081	GC/ECD	1 µg/kg	n/a
Heptachlor Epoxide	USEPA 8081	GC/ECD	1 µg/kg	n/a
γ-BHC	USEPA 8081	GC/ECD	1 µg/kg	n/a
Methoxychlor	USEPA 8081	GC/ECD	10 µg/kg	n/a
Lindane	USEPA 8081	GC/ECD	1 µg/kg	n/a
Toxaphene	USEPA 8081	GC/ECD	100 µg/kg	n/a
PCBs				
Aroclor 1016	USEPA 8082	GC/ECD	4 µg/kg	n/a
Aroclor 1221	USEPA 8082	GC/ECD	4 µg/kg	n/a
Aroclor 1232	USEPA 8082	GC/ECD	4 µg/kg	n/a
Aroclor 1242	USEPA 8082	GC/ECD	4 µg/kg	n/a
Aroclor 1248	USEPA 8082	GC/ECD	4 µg/kg	n/a
Aroclor 1254	USEPA 8082	GC/ECD	4 µg/kg	n/a
Aroclor 1260	USEPA 8082	GC/ECD	4 µg/kg	n/a

Parameter	Method	Procedure	Sediment Target Reporting Limit (dry weight)	Tissue Target Reporting Limit (wet weight)
Semivolatile Organics				
Acenaphthene	USEPA 8270	GC/MS SIM	7 µg/kg	n/a
Fluorene	USEPA 8270	GC/MS SIM	7 µg/kg	n/a
Phenanthrene	USEPA 8270	GC/MS SIM	7 µg/kg	n/a
Anthracene	USEPA 8270	GC/MS SIM	7 µg/kg	n/a
Fluoranthene	USEPA 8270	GC/MS SIM	7 µg/kg	n/a
Pyrene	USEPA 8270	GC/MS SIM	7 µg/kg	n/a
Chrysene	USEPA 8270	GC/MS SIM	7 µg/kg	n/a
Benzo(a)anthracene	USEPA 8270	GC/MS SIM	7 µg/kg	n/a
Benzo(b)fluoranthene	USEPA 8270	GC/MS SIM	7 µg/kg	n/a
Benzo(a)pyrene	USEPA 8270	GC/MS SIM	7 µg/kg	n/a
Indeno(1,2,3-cd)pyrene	USEPA 8270	GC/MS SIM	7 µg/kg	n/a
Dibenzo(a,h)anthracene	USEPA 8270	GC/MS SIM	7 µg/kg	n/a
Benzo(g,h,i)perylene	USEPA 8270	GC/MS SIM	7 µg/kg	n/a
Phthalates				
Diethylphthalate	USEPA 8270	GC/MS	20 µg/kg	n/a
Dimethylphthalate	USEPA 8270	GC/MS	20 µg/kg	n/a
Butylbenzylphthalate	USEPA 8270	GC/MS	20 µg/kg	n/a
bis(2-Ethylhexyl) phthalate	USEPA 8270	GC/MS	20 µg/kg	n/a
Di-n-octylphthalate	USEPA 8270	GC/MS	20 µg/kg	n/a
Organotins				
Monobutyltin	Krone et al. (1989)	GC/MS SIM	10 µg/kg	n/a
Dibutyltin	Krone et al. (1989)	GC/MS SIM	10 µg/kg	n/a
Tributyltin	Krone et al. (1989)	GC/MS SIM	10 µg/kg	n/a

#: percent

ng/kg: nanogram per kilogram

µg/kg: microgram per kilogram

g/cc: gram per cubic centimeter

n/a: not applicable

GC/MS: gas chromatography/mass spectrometry

SIM: selected ion monitoring

* EPA Method 1664 is substituted for EPA 413.2

2.7.3 BIOACCUMULATION TISSUE CHEMISTRY

Tissue analysis was performed to determine the availability of sediment contaminants taken up by the test organisms. The chemical constituents for tissue analysis (including pre-exposure samples) were determined following a review of the sediment chemistry results, in consultation with USACE and USEPA. Based on sediment chemistry results, mercury and lipids were analyzed in test tissues. Tissue composites from each replicate were analyzed separately.

2.7.4 QUALITY ASSURANCE/QUALITY CONTROL

The QA objectives for chemical analysis conducted by the participating analytical laboratories are detailed in their Laboratory QA Manual(s). These objectives for accuracy and precision involve all aspects of the testing process, including the following:

- Methods and SOPs
- Calibration methods and frequency
- Data analysis, validation, and reporting
- Internal QC
- Preventive maintenance
- Procedures to ensure data accuracy and completeness

Results of all laboratory QC analyses are reported with the final data. Any QC samples that failed to meet the specified QC criteria in the methodology or QAP were identified, and the corresponding data was appropriately qualified in the final report.

All QA/QC records for the various testing programs will be kept on file for review by regulatory agency personnel.

2.8 DATA REVIEW, MANAGEMENT, AND ANALYSIS

2.8.1 DATA REVIEW

All data were reviewed and verified by participating team laboratories to determine whether all data quality objectives had been met, and that appropriate corrective actions had been taken, when necessary. NewFields' QA Officer or her delegate was responsible for the final review of all data generated.

2.8.2 DATA ANALYSIS

Data analysis consisted of tabulation and comparison with reference sites. Sandy sediments were also evaluated for suitability for use in beach nourishment under Regional General Permit 67 or under an individual permit. Marine sediments that did not qualify for beach nourishment, either due to grain size or the presence of contaminants were reviewed for open ocean disposal at LA-3. Biological results were compared to appropriate laboratory controls and reference results where applicable as designated in the OTM (USEPA/USACE 1991). Additional interpretation criteria are discussed in Section 4.

3 RESULTS

3.1 SAMPLING RESULTS

Sediment cores were collected from a total of 15 stations. Five stations were located in Area A, four stations were sampled in Area B, and six stations were sampled in Area C. With the exception of MP-9, samples were collected from each of the proposed stations. Station MP-3 was moved south from the proposed location due to a lack of access. Station MP-9 was replaced with Station MP-6b to provide a better indication of sediment in the upper beach area. In Area C, an additional station was sampled, Station MP-16, to provide a better indication of the deeper sediment in the nearshore portion of that area. Information on sample location, depth (MLLW), targeted core length; penetration depth and length of core recovered are included in Table 3.1. Reference samples were collected from LA-3 Reference on December 1, 2008. Field logs are presented in Appendix A. The approximate location of each sediment core is provided in Figure 1.2.

Samples from Areas A and B were collected using a direct-push CPT on November 26, 2008. Sediment was collected to the proposed sampling depth (14.5 ft. MLLW) for each of the Area A and B stations. In some cases, a void appeared in the core, generally one foot in length. This was caused by compaction of loose sands by the head of the CPT.

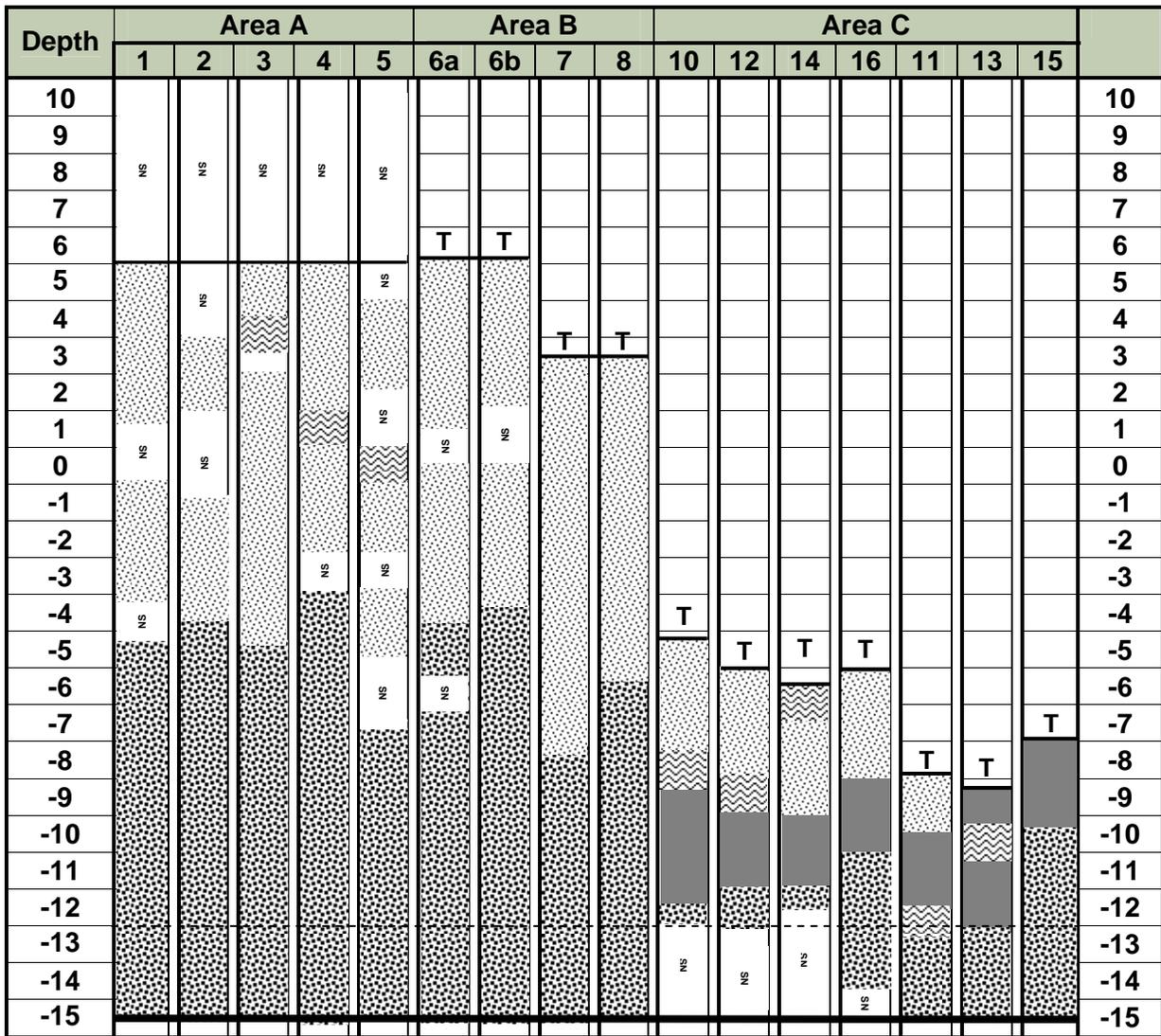
Subtidal samples in Area C were collected using a vibrocorer on December 12, 2008. Penetration depths at each station were sufficient to reach the ancient Bay sand layer; however, refusal was observed at this layer for nearshore stations MP-10, MP-12, and MP-14. An additional station, Station MP-16, was sampled to determine the precise location of the ancient Bay sand layer and to retrieve sufficient material to characterize this layer for the nearshore portion of Area C. With the exception of Station MP-14, project depth (-12 ft. MLLW) was sampled for all stations within Area C. Stations located further offshore, Stations MP-11, MP-13, and MP-15, were sampled to the project depth plus the 2 ft. overdredge and the z-layer sample.

Sediment cores in Area A were generally characterized by sand overlying coarse sand (Figure 3.1). The boundary layer between the finer, more recent sands and the ancient-Bay sands was at approximately -4 to -5 ft. MLLW. Area B included lighter beach sands overlying the upper layer, gray sands, overlaying the coarser deep sands. As with Area A, the boundary between the finer sands and coarser sands occurred between -4 to -5 ft. MLLW, with the exception of Station MP-7, with the boundary was observed at -7 to -8 ft MLLW. Sediment in the nearshore portion of Area C differed from that of the channel stations further offshore. In the nearshore area, sands similar to the surface sands in Area B were found overlaying a moderately compacted silt/clay layer, overlaying the ancient Bay sand. A similar sediment composition was observed at the western portion of the channel stations, Station MP-11. The sediments observed at Stations MP-13 and MP-15 were generally characterized by silts and clays overlaying the ancient Bay sands.

Each of the cores was split into an upper and lower section at the boundary with the ancient Bay sands. The upper sections within each area were composited to create an upper Area composite and the lower sections within each area were composited to create a lower Area composite. In addition, the upper and lower sections from each core were either archived for possible future analysis (Areas A and B) or submitted for mercury and grain size analysis (Area C).

Table 3–1. Sample Log Data, Marina Park 2008

Site	Core Type	Coordinates		Depth (ft MLLW)	Target Core Length (ft)	Actual Core Length (ft)	Comments
		Latitude (°N)	Longitude (°W)				
Area A							
MP-1	CPT	33° 36.474	117° 55.325	+ 9 to 10	20	20	<i>Upper 4 to 5 feet above core not included in analysis; top of 20 ft. core is at +4 to 5 ft MLLW</i>
MP-2	CPT	33° 36.479	117° 55.338	+ 9 to 10	20	20	
MP-3	CPT	33° 36.469	117° 55.312	+ 9 to 10	20	20	
MP-4	CPT	33° 36.492	117° 55.310	+ 9 to 10	20	20	
MP-5	CPT	33° 36.494	117° 55.326	+ 9 to 10	20	20	
Area B							
MP-6a	CPT	33° 36.498	117° 55.325	+ 6	20	20	<i>Surface sediment from beach included in core.</i>
MP-6b	CPT	33° 36.495	117° 55.313	+ 6	20	20	
MP-7	CPT	33° 36.507	117° 55.312	+ 3 to 4	18	18	
MP-8	CPT	33° 36.510	117° 55.336	+ 3 to 4	18	18	
MP-9	VC	33° 36.515	117° 55.361	+ 1	16	3.0	<i>Refusal at 3'; 3 attempts; unable to sample with VC</i>
Area C							
MP-10	VC	33° 36.525	117° 55.363	- 4.1	10.4	8.0	<i>Refusal at -12.0'; 0.5 ft. sand lost from cutter head</i>
MP-11	VC	33° 36.527	117° 55.362	- 7.5	7.0	7.0	
MP-12	VC	33° 36.519	117° 55.332	-5.0	9.5	7.0	<i>Refusal at -12.0'; approximately 1.0 ft. of sand lost from cutter head</i>
MP-13	VC	33° 36.532	117° 55.335	-8.5	6.5	6.5	
MP-14	VC	33° 36.525	117° 55.308	-5.5	9.0	6.0	<i>Refusal at -11.5'; 0.5 ft. sand lost from cutter head</i>
MP-15	VC	33° 36.539	117° 55.305	-6.5	7.9	7.9	
MP-16	VC	33° 36.521	117° 55.327	-5.1	9.5	8.5	<i>Refusal at -13.5'</i>



NS: no sample

Figure 6. General Characterization of Sediment in Cores from Marina Park.

3.2 PHYSICAL AND CHEMICAL ANALYSIS OF SEDIMENT

Physical characterizations and conventional analysis of all composites and the reference sample included grain size determination, total organic carbon (TOC) content, percent total solids, oil and grease, total recoverable petroleum, total ammonia and sulfides, and Atterberg limits. Chemical characterizations included metals, organotins, PAH's, chlorinated pesticides, PCB aroclors, and phthalates. Results of these characterizations are summarized in the following sections.

3.2.1 PHYSICAL CHARACTERISTICS AND CONVENTIONAL CHEMICAL ANALYSIS

Physical characteristics of composites and the reference sample are shown in Table 3-2. Area A and B composites, as well as Comp C-L, were >95% sand and gravel, with very little fine sediment. Comp C-U was comprised of approximately 78% sand, with approximately 22% silt and clay. The LA-3 Reference site was predominantly silt with 29.6% clay and only 3.2% sand.

TOC content was generally low in the A and B composites, ranging from 0.02% - 0.15% TOC. Comp C-U was somewhat higher with 0.68% TOC content. The reference sample had TOC content of 1.8%. Oil and grease and TRPH were below detection levels in all samples. Total ammonia levels were generally low or undetected (<0.1 to 1.2 mg/kg total ammonia), with the highest concentration in the test composites being 14.8 mg/kg total ammonia in Comp C-U. The total ammonia concentration in the LA-3 Reference sediment was 4.8 mg/kg total ammonia. Sulfides were detectable only in Comp A-U and Comp B-L, with 7.56 and 4.25 mg/kg respectively.

All composites and the reference were analyzed for plasticity using the Atterberg test. Area A and B composites and Comp C-L displayed no plasticity. The Atterberg limits found for the LA-3 Reference and Comp C-U were 30.3 and 16.9 cm respectively.

Table 3-2. Summary of Conventionals, Marina Park 2008

Analyte	LA-3	Composites					
		A-U Comp	A-L Comp	B-U Comp	B-L Comp	C-U Comp	C-L Comp
Gravel (%)	0.0	2.2	9.6	2.3	5.2	0.0	3.7
Sand (%)	3.2	93.6	89.7	93.6	93.0	77.9	95.3
Silt (%)	67.2	2.6	0.7	2.7	1.8	10.5	1.0
Clay (%)	29.6	1.6	<1 U	1.5	<1 U	11.6	0.0
Total Organic Carbon (%)	1.8	0.15	0.08	0.02	0.02	0.68	0.05
Total Solids (%)	43.5	84.6	90.3	89.3	86.6	76.2	87.4
Oil and Grease (mg/kg)	<450U	<230 U	<215 U	<218 U	<226 U	<262 U	<221 U
TRPH (mg/kg)	<450U	<230 U	<215 U	<218 U	<226 U	<262 U	<221 U
Total Ammonia (mg/kg)	4.8	1.2	0.11	0.2	<0.10 U	14.5	<0.5
Total Sulfides (mg/kg)	NM	7.56	<1.20 U	<1.16 U	4.25	NM	NM
Atterberg Limits (cm)	30.3	Not Plastic	Not Plastic	Not Plastic	Not Plastic	16.9	Not Plastic

NM: Not Measured

U: Undetected. Actual concentration below reported concentration

3.2.2 METALS

The test composites and the reference sample were analyzed for the presence of ten different metals (Table 3-3). Selenium and silver were not detected in any of the samples. With the exception of mercury, all detected metals concentrations in the test composites were below those of LA-3 Reference. With the exception of mercury in Comp C-U and chromium in Comp C-U and LA-3 Reference, metals concentrations in test samples were well below the effects range- low (ERL). Chromium was found at concentrations of 12.4 and 40 mg/kg, above the ERL (8.1 mg/kg), but well below the effects range-median (ERM, 370 mg/kg). The mercury concentration in Comp C-U was 0.36 mg/kg, which was above the ERL (0.15 mg/kg) but below the ERM (0.71 mg/kg).

Upper and lower sections from the individual cores in Area C were analyzed for mercury concentrations (Table 3-3). In the upper cores collected from the nearshore stations (MP-10, 12, 14, and 16), mercury concentrations ranged from 0.10 to 0.85 mg/kg. In sediment collected from the channel stations, the mercury concentrations in the upper sections were 1.11 mg/kg and 3.35 mg/kg for Stations MP-13 and MP-15, respectively. Mercury was not detected in any of the lower sections from either the nearshore stations or channel stations.

Table 3-3. Inorganic Metals in Sediment, Marina Park 2008

Analyte	ERL	ERM	LA-3	Composites					
				A-U Comp	A-L Comp	B-U Comp	B-L Comp	C-U Comp	C-L Comp
Arsenic	8.2	70	5.5	2.0	2.1	2.2	1.9	3.7	2.1
Cadmium	1.2	9.5	0.9	<0.2 U	<0.2 U	0.2	<0.2 U	0.4	<0.2 U
Chromium	8.1	370	40	4.0	2.2	3.0	3.2	12.4	2.8
Copper	34	270	22	2.0	1.0	3.7	2.4	18.3	1.2
Lead	46.7	218	13	<2 U	<2 U	5	<2 U	9.0	<1 U
Mercury	0.15	0.71	0.10	<0.05 U	<0.06 U	0.05	<0.05 U	0.36	<0.5 U
Nickel	20.9	51.6	24	3	<1 U	2	2	9.2	1.9
Selenium	NA	NA	<1 U	<0.2 U	<0.2 U	<0.2 U	<0.2 U	<0.6 U	<0.6 U
Silver	1.0	3.7	<0.4 U	<0.3 U	<0.3 U	<0.3 U	<0.3 U	<0.2 U	<0.2 U
Zinc	150	410	83	10	6	11	6	44	6
Section	Hg ERL	Hg ERM	Mercury Concentrations in Cores (mg/kg)						
			MP-10	MP-12	MP-14	MP-16	MP-13	MP-15	
Upper Section	0.15	0.71	0.10	0.31	0.85	0.07	1.11	3.35	
Lower Section	0.15	0.71	<0.06 U	<0.07 U	<0.06 U	<0.05 U	<0.05 U	<0.05 U	

U: Undetected. Actual concentration below reported concentration

No data for MP-11.

3.2.3 ORGANOTINS

Tributyltin was not detected in any of the test composites (Table 3-4). No organotins were observed in Comps C-U or C-L, or in the LA-3 Reference. Monobutyltin and dibutyltin was detected in the area A and B composites.

Table 3-4. Organotins in Sediment, Marina Park 2008

Analyte	LA-3	Composites					
		A-U Comp	A-L Comp	B-U Comp	B-L Comp	C-U Comp	C-L Comp
Tributyltin	<3.8 U	<3.6 U	<3.4 U	<3.6 U	<3.6 U	<3.6 U	<3.7 U
Dibutyltin	<5.6 U	14	15	13	19	<5.3 U	<5.6 U
Monobutyltin	<4.0 U	5.5	4.5	<3.4 U	6.1	<3.8 U	<4.0 U

U: Undetected. Actual concentration below reported concentration

3.2.4 POLYCYCLIC AROMATIC HYDROCARBONS

Each of the test composites and the reference sample were analyzed for the presence of PAHs (Table 3-5). None of the 16 PAHs were detected in either the upper or lower composites from Area A or Comps B-L or C-L. Concentrations of some PAHs were observed above reporting limits in Comps B-U and C-U. However, these concentrations were quite low and were below the PAHs concentrations observed in sediment from LA-3 Reference. The total detected PAHs were 32.7 µg/kg and 108.1 µg/kg in Comps B-U and C-U, respectively. Concentrations observed in the test composites were well below the ERL (4,022 µg/kg).

Table 3-5. PAHs in Sediment, Marina Park 2008

Analyte	LA-3	Composites					
		A-U Comp	A-L Comp	B-U Comp	B-L Comp	C-U Comp	C-L Comp
Acenaphthylene	<4.8 U	<4.9 U	<4.7 U	<4.8 U	<4.9 U	<4.8 U	<4.5 U
Acenaphthene	<4.8 U	<4.9 U	<4.7 U	<4.8 U	<4.9 U	<4.8 U	<4.5 U
Fluorene	<4.8 U	<4.9 U	<4.7 U	<4.8 U	<4.9 U	<4.8 U	<4.5 U
Phenanthrene	<4.8 U	<4.9 U	<4.7 U	<4.8 U	<4.9 U	<4.8 U	<4.5 U
Anthracene	<4.8 U	<4.9 U	<4.7 U	<4.8 U	<4.9 U	<4.8 U	<4.5 U
Fluoranthene	8.7	<4.9 U	<4.7 U	<4.8 U	<4.9 U	15	<4.5 U
Pyrene	11	<4.9 U	<4.7 U	<4.8 U	<4.9 U	19	<4.5 U
Benz[a]anthracene	<4.8 U	<4.9 U	<4.7 U	<4.8 U	<4.9 U	6.3	<4.5 U
Chrysene	5.8	<4.9 U	<4.7 U	5.8	<4.9 U	7.8	<4.5 U
Benzo[b]fluoranthene	5.3	<4.9 U	<4.7 U	4.8	<4.9 U	12	<4.5 U
Indeno[1,2,3-c,d]pyrene	<4.8 U	<4.9 U	<4.7 U	7.7	<4.9 U	12	<4.5 U
Dibenz[a,h]anthracene	<4.8 U	<4.9 U	<4.7 U	<4.8 U	<4.9 U	<4.8 U	<4.5 U
Benzo[g,h,i]perylene	4.8	<4.9 U	<4.7 U	9.6	<4.9 U	20	<4.5 U
Benzo[a]pyrene	5.3	<4.9 U	<4.7 U	4.8	<4.9 U	16	<4.5 U
Total Detected PAHs	40.9	0	0	32.7	0	108.1	0

U: Undetected. Actual concentration below reported concentration

ERL: 4,022 µg/kg

3.2.5 CHLORINATED PESTICIDES

Each composite and the reference sample were analyzed for a suite of chlorinated pesticides. The results are summarized in Table 3-6. There were no concentrations found above the reporting limits in any of the test composites.

Table 3-6. Chlorinated Pesticides in Sediment, Marina Park 2008

Analyte	LA-3	Composites					
		A-U Comp	A-L Comp	B-U Comp	B-L Comp	C-U Comp	C-L Comp
2,4'-DDD	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<1.9 U
2,4'-DDE	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<1.9 U
2,4'-DDT	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<1.9 U
4,4'-DDD	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<1.9 U
4,4'-DDE	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<1.9 U
4,4'-DDT	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<1.9 U
Total Detected DDTs	0	0	0	0	0	0	0
Aldrin	<0.98 U	<0.97U	<0.98U	<0.99U	<0.98U	<0.98U	<0.94U
BHC-alpha	<0.98 U	<0.97U	<0.98U	<0.99U	<0.98U	<0.98U	<0.94U
BHC-beta	<0.98 U	<0.97U	<0.98U	<0.99U	<0.98U	<0.98U	<0.94U
BHC-delta	<0.98 U	<0.97U	<0.98U	<0.99U	<0.98U	<0.98U	<0.94U
BHC-gamma (Lindane)	<0.98 U	<0.97U	<0.98U	<0.99U	<0.98U	<0.98U	<0.94U
Chlordane-alpha	<0.98 U	<0.97U	<0.98U	<0.99U	<0.98U	<0.98U	<0.94U
Chlordane-gamma	<0.98 U	<0.97U	<0.98U	<0.99U	<0.98U	<0.98U	<0.94U
Oxychlordane	<0.98 U	<0.97U	<0.98U	<0.99U	<0.98U	<0.98U	<0.94U
Total Detectable Chlordane	0	0	0	0	0	0	0
Dieldrin	<2.0 U	<0.97U	<0.98U	<0.99U	<0.98U	<2.0U	<1.9U
Endosulfan Sulfate	<2.0 U	<0.97U	<0.98U	<0.99U	<0.98U	<2.0U	<1.9U
Endosulfan-I	<0.98 U	<0.97U	<0.98U	<0.99U	<0.98U	<0.98U	<0.94U
Endosulfan-II	<2.0 U	<0.97U	<0.98U	<0.99U	<0.98U	<2.0U	<1.9U
Endrin	<2.0 U	<0.97U	<0.98U	<0.99U	<0.98U	<2.0U	<1.9U
Endrin Aldehyde	<2.0 U	<0.97U	<0.98U	<0.99U	<0.98U	<2.0U	<1.9U
Heptachlor	<0.98 U	<0.97U	<0.98U	<0.99U	<0.98U	<0.98U	<0.94U
Heptachlor Epoxide	<0.98 U	<0.97U	<0.98U	<0.99U	<0.98U	<0.98U	<0.94U
Methoxychlor	<9.8 U	<9.7 U	<9.8U	<9.9U	<9.8U	<9.8U	<9.4U
Mirex	<0.98 U	<0.97U	<0.98U	<0.99U	<0.98U	<0.98U	<0.94U
Toxaphene	<98 U	<97 U	<98U	<99U	<98U	<98U	<94U

U: Undetected. Actual concentration below reported concentration

3.2.6 PCB AROCOLORS

Each composite and the reference sample were analyzed for seven PCB aroclors. The results are summarized in Table 3-7. There were no concentrations found above the reporting limits in any of the test composites.

3.2.7 PHTHALATES

Each composite and the reference sample were analyzed for 5 phthalates. The results are summarized in Table 3-8. There were no concentrations found above the reporting limits in any of the test composites.

Table 3-7. PCB Aroclors in Sediment, Marina Park 2008

Analyte	LA-3	Composites					
		A-U Comp	A-L Comp	B-U Comp	B-L Comp	C-U Comp	C-L Comp
Aroclor 1016	<20 U	<20 U	<20 U	<20 U	<20 U	<20 U	<19 U
Aroclor 1242	<20 U	<20 U	<20 U	<20 U	<20 U	<20 U	<19 U
Aroclor 1248	<20 U	<20 U	<20 U	<20 U	<20 U	<20 U	<19 U
Aroclor 1254	<20 U	<20 U	<20 U	<20 U	<20 U	<20 U	<19 U
Aroclor 1260	<20 U	<20 U	<20 U	<20 U	<20 U	<20 U	<19 U
Aroclor 1221	<20 U	<20 U	<20 U	<20 U	<20 U	<20 U	<19 U
Aroclor 1232	<20 U	<20 U	<20 U	<20 U	<20 U	<20 U	<19 U
Total Detected PCBs	0	0	0	0	0	0	0

U: Undetected. Actual concentration below reported concentration

Table 3-8. Phthalates in Sediment, Marina Park 2008

Analyte	LA-3	Composites					
		A-U Comp	A-L Comp	B-U Comp	B-L Comp	C-U Comp	C-L Comp
Dimethylphthalate	<20 U	<20 U	<19 U	<20 U	<20 U	<19 U	<19 U
Diethylphthalate	<20 U	<20 U	<19 U	<20 U	<20 U	<19 U	<19 U
Butylbenzylphthalate	<20 U	<20 U	<19 U	<20 U	<20 U	<19 U	<19 U
bis(2-Ethylhexyl)phthalate	<20 U	<20 U	<19 U	<20 U	<20 U	<19 U	<19 U
Di-n-Octyl phthalate	<20 U	<20 U	<19 U	<20 U	<20 U	<19 U	<19 U

U: Undetected. Actual concentration below reported concentration

3.3 RESULTS OF BENTHIC AND WATER-COLUMN BIOASSAYS

This section presents a summary of bioassays conducted in support of the EIR for the Marina Park project. Results for each replicate, all water quality observations, statistical analysis, and bench sheets for each test are provided in Appendix C.

3.3.1 10-DAY BENTHIC AMPHIPOD TEST

The 10-d amphipod test with *Ampelisca abdita* was initiated on December 19, 2008. A summary of test results, water quality observations and an overall summary of the test are presented in Tables 3-9 to 3-11. The test was validated by 90% survival in the controls. The LC₅₀ for the cadmium reference-toxicant test was 0.54 mg Cd/L, within the control chart limits (0.13 – 1.09 mg Cd/L), indicating that the test animals were similar in sensitivity to previous populations used at the NewFields laboratory.

Temperature and salinity were slightly outside the target range in all treatments except for the control. Deviations were generally less than one unit (°C or ppt) and did not appear to have an effect on the test organism survival. Ammonia levels were below NOEC (approximately 20 mg/L total ammonia) for all treatments.

Mean percent survival in LA-3 Reference was 92.0%. In Comp C-U and Comp C-L survival was 87.0 and 89.0% relatively. There was no significant difference between test treatments and the reference.

Table 3-9. Survival Summary for the 10-day Benthic Test with *A. abdita*

Treatment	Mean Percentage Survival	SD
Control	90	3.5
LA-3 Reference	92	2.7
Comp C-U	87	7.6
Comp C-L	89	4.2

Table 3-10. Summary of Water Quality for the 10-day Benthic Test with *A. abdita*

Treatment	Dissolved Oxygen (mg/L)			Temperature (°C)			pH (units)			Salinity (ppt)		
	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max
Control	6.3	5.3	7.3	19.1	18.6	19.5	8.1	7.7	8.5	30.2	29.0	32.0
LA-3 Reference	6.7	5.7	7.7	19.2	18.3	19.6	8.1	7.8	8.4	32.6	31.0	36.0
Comp C-U	6.6	5.5	8.0	19.2	17.8	19.6	8.1	7.7	8.3	32.1	31.0	35.0
Comp C-L	6.7	5.8	8.0	19.2	18.0	19.6	8.1	7.8	8.3	32.2	31.0	35.0

Table 3-11. Test Condition Summary for *Ampelisca abdita*

Test Conditions: <i>A. abdita</i>		
Sample Identification	LA-3 Ref, Comp C-L, Comp C-U	
Date sampled	12/8/2008	
Date received	12/13/2008	
Sample storage	4°C, dark	
Weeks of holding	1 week	
Control sediment	Tomales Bay, California (native sediment)	
Test Species	<i>Ampelisca abdita</i>	
Supplier	John Brezina	
Date acquired	12/17/2008	
Acclimation/holding time	2 days	
Age class	Adult	
Test Procedures	OTM/ ITM	
Regulatory Program	OTM/ ITM	
Test location	NewFields Northwest Laboratory	
Test type/duration	10-Day static	
Test dates	12/19/2008-12/29/2008	
Control water	0.45 µm-filtered North Hood Canal sea water	
Test temperature	Recommended: 20 ± 1 °C	Achieved: 17.8 – 19.6 °C
Test Salinity	Recommended: 32 ± 2 ppt	Achieved: 29-36 ppt
Test dissolved oxygen	Recommended: > 4.6 mg/L	Achieved: 5.3- 8.0 mg/L
Test pH	Recommended: 8.0 ± 0.5	Achieved: 7.7-8.5
Control performance standard	Recommended: Control ≤ 10% mortality	Achieved: 10%
Reference performance standard	Recommended: Reference mortality < 25%	Achieved: 8%
Reference Toxicant LC50	0.54 mg/L Cd	
Acceptable Range	0.13 – 1.09 mg/L	
Test Lighting	Continuous	
Test chamber	1-Liter Glass Chamber	
Replicates/treatment	5 + 2 surrogates for measuring porewater ammonia levels	
Organisms/replicate	20	
Exposure volume	175 mL sediment/ 950 mL water	
Feeding	None	
Water renewal	None	
Deviations from Test Protocol	Salinity and temperature out of range for all except Control	

3.3.2 10-DAY SOLID-PHASE POLYCHAETE WORM TEST

The 10-d polychaete worm test with *Neanthes arenaceodentata* was initiated on December 19, 2008. A summary of test results, water quality observations and an overall summary of the test are presented in Tables 3-12 to 3-14. The test was validated by 92% survival in the controls. The LC₅₀ for the cadmium reference-toxicant test was 10.4 mg Cd/L within the control chart limits (2.87- 16.9 mg Cd/L). Temperature fell slightly below and salinity increased above the target range in all treatments. This did not appear to have an effect on the animals as evidenced by the high survival rates in all treatments. Ammonia levels were below NOEC (approximately 5 mg/L) for all treatments.

Mean percent survival in LA-3 Reference was 92.0%. Mean percent survival in the test treatments was 84.0% for both Comp C-L and Comp C-U. There was no significant difference between treatments and the reference.

Table 3-12. Survival Summary for the 10-day Benthic Test with *N. arenaceodentata*

Treatment	Mean Percentage Survival	SD
Control	92.0	11
LA-3 Reference	92	17.9
Comp C-U	84.0	21.9
Comp C-L	84.0	16.7

Table 3-13. Summary of Water Quality, 10-Day Benthic Test with *N. arenaceodentata*

Treatment	Dissolved Oxygen (mg/L)			Temperature (°C)			pH (units)			Salinity (ppt)		
	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max
Control	7.0	6.6	7.9	19.0	18.0	19.6	8.1	7.7	8.2	31.9	31.0	34.0
LA-3 Reference	6.9	6.3	7.3	19.0	18.0	19.5	8.1	7.8	8.2	32.2	31.0	34.0
Comp C-U	6.8	6.4	7.7	19.0	18.3	19.5	8.1	7.8	8.2	31.9	31.0	33.0
Comp C-L	6.9	6.3	7.9	19.0	18.0	19.6	8.1	7.8	8.2	32.3	31.0	35.0

Table 3-14. Test Condition Summary for *Neanthes arenaceodentata*

Test Conditions: <i>N. arenaceodentata</i>		
Sample Identification	LA-3 Ref, Comp C-L, Comp C-U	
Date sampled	12/8/2008	
Date received	12/13/2008	
Sample storage	4°C, dark	
Weeks of holding	1 week	
Control sediment	Yaquina Bay, Oregon	
Test Species	<i>N. arenaceodentata</i>	
Supplier	Don Reish	
Date acquired	12/16/2008	
Acclimation/holding time	3 days	
Age class	Juvenile	
Test Procedures	OTM/ ITM	
Regulatory Program	OTM/ ITM	
Test location	NewFields Northwest Laboratory	
Test type/duration	10-Day static	
Test dates	12/19/2008-12/29/2008	
Control water	0.45 µm-filtered North Hood Canal sea water	
Test temperature	Recommended: 20 ± 1 °C	Achieved: 17.8 – 19.6 °C
Test Salinity	Recommended: 30 ± 2 ppt	Achieved: 29-36 ppt
Test dissolved oxygen	Recommended: > 4.6 mg/L	Achieved: 5.3- 8.0 mg/L
Test pH	Recommended: 8.0 ± 0.5	Achieved: 7.7-8.5
Control performance standard	Recommended: Control ≤ 10% mortality	Achieved: 10%
Reference performance standard	Recommended: Reference mortality < 25%	Achieved: 8%
Reference Toxicant LC50	10.4 mg/L	
Acceptable Range	2.87- 16.9 mg/L	
Test Lighting	Continuous	
Test chamber	1-Liter Glass Chamber	
Replicates/treatment	5 + 2 surrogates for measuring porewater ammonia levels	
Organisms/replicate	5	
Exposure volume	175 mL sediment/ 950 mL water	
Feeding	None	
Water renewal	None	
Deviations	Salinity and temperature out of range for all except Control	

3.3.3 RESULTS OF THE WATER-COLUMN TEST WITH MENIDIA BERYLLINA

The water-column test with *M. beryllina* was initiated on January 7, 2009. A summary of test results, water quality observations and an overall summary of the test are presented in Tables 3-15 to 3-17. The test was validated by 96% survival in the controls. The LC50 for the copper reference-toxicant test was 227 µg Cu/L, and was inside the control chart limits (91.4 - 454 mg Cu/L), indicating that the population of test organisms used in this test were similar in sensitivity to those previously tested at the NewFields laboratory. Bench sheets, including survival in each of the treatment replicates, are presented in Appendix D.

Salinity levels were slightly out of the target range for all treatments, but were within the tolerance range for this species and did not appear to have no effect as evidenced by the high survival rates. Ammonia levels were below NOEC for all treatments.

Mean percentage survival in the 100% SPP for Comp C-U and Comp C-L samples were 88% to 98% relatively. There was no significant difference between test treatments and control survival, and the estimated LC50 for both treatments was >100%.

Table 3-15. Summary of Results for the Water-column Test with *M. beryllina*

Treatment	SPP (%)	Mean Percentage Survival	SD	LC50
Control	0	96	8.9	NA
Site Water	0	96	8.9	NA
Comp C-U	10	92	17.9	>100%
	50	94	5.5	
	100	88	8.4	
Comp C-L	10	88	11.0	>100%
	50	94	5.5	
	100	98	4.5	

Table 3-16. Summary of Water Quality for the Water-column Test with *M. beryllina*

Treatment	SPP (%)	Dissolved Oxygen (mg/L)			Temperature (°C)			Salinity (ppt)			pH (units)		
		Mean	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max
Control	0	7.3	6.5	7.9	19.2	18.6	19.8	32.8	32.0	34.0	7.6	7.4	8.0
Site Water	0	7.4	6.8	9.0	19.4	19.1	19.8	35.3	34.0	37.0	7.8	7.6	7.9
Comp C-U	10	7.3	6.8	8.0	19.3	18.8	19.9	33.3	32.0	36.0	7.9	7.7	8.0
	50	7.2	6.6	7.7	19.5	19.0	19.9	33.9	33.0	35.0	7.9	7.7	8.0
	100	6.9	6.5	7.4	19.5	19.3	19.9	35.2	34.0	36.0	7.9	7.7	8.2
Comp C-L	10	7.1	6.6	8.2	19.4	18.7	19.9	32.8	32.0	34.0	7.9	7.7	7.9
	50	7.2	6.6	8.0	19.4	18.7	19.9	34.6	33.0	36.0	7.8	7.7	8.0
	100	7.3	6.9	8.0	19.5	19.2	19.9	34.7	34.0	36.0	7.9	7.8	8.0

Table 3-17. Test Condition Summary for *Menidia beryllina*

Test Conditions: <i>M. beryllina</i>		
Sample Identification	LA-3 Ref, Comp C-L, Comp C-U	
Date sampled	12/8/2008	
Date received	12/13/2008	
Sample storage	4°C, dark	
Weeks of holding	3 weeks	
Test Species	<i>M. beryllina</i>	
Supplier	Aquatic BioSystems	
Date acquired	1/6/2009	
Acclimation/holding time	1 day	
Age class	10 days old	
Test Procedures	OTM/ ITM	
Regulatory Program	OTM/ ITM	
Test location	NewFields Northwest Laboratory	
Test type/duration	96-hour SPP	
Test dates	1/7/2009-1/11/2009	
Control water	0.2µm-filtered North Hood Canal sea water	
Test temperature	Recommended: 20 ± 1 °C	Achieved: 18.6 – 19.9°C
Test Salinity	Recommended: 31 ± 2 ppt	Achieved: 32- 37 ppt
Test dissolved oxygen	Recommended: > 3.7 mg/L	Achieved: 6.5- 9.0 mg/L
Test pH	Recommended: 7.8 ± 0.5	Achieved: 7.4-8.2
Control performance standard	Recommended: Control ≤ 10% mortality	Achieved: 4%
Reference Toxicant LC50	307 µg Cu/L	
Acceptable Range	89.6- 443 µg Cu/L	
Test Lighting	16- hours light, 8-hours dark	
Test chamber	600mL Glass Chamber	
Replicates/treatment	5	
Organisms/replicate	10	
Exposure volume	250 mL	
Feeding	Once at 48 hours	
Water renewal	None	
Deviations	Salinity out of range in all treatments	

3.3.4 RESULTS OF THE WATER-COLUMN TEST WITH *AMERICAMYSIS BAHIA*

The water-column test with *A. bahia* was initiated on January 7, 2009. A summary of test results, water quality observations and an overall summary of the test are presented in Tables 3-18 to 3-19. The test was validated by 98% survival in the controls. The LC50 for the copper reference-toxicant test was 233 µg Cu/L, and was inside the control chart limits (140 - 406 mg Cu/L), indicating that the population of test organisms used in this test were similar in sensitivity to those previously tested at the NewFields laboratory. Bench sheets, including survival in each of the treatment replicates, are presented in Appendix D.

Salinity levels were out of range for all treatments, but did not appear to have affected survival as evidenced by the high survival rates. Ammonia levels were below NOEC for all treatments. Mean percentage survival in the 100% SPP for Comp C-U and Comp C-L samples were both 98%, and the estimated LC50 for each of the test treatments was >100%.

Table 3-18. Summary of Results for the Water-column Test with *A. bahia*

Treatment	SPP (%)	Mean Percentage Survival	SD	LC50
Control	0	98	4.5	NA
Site Water	0	98	4.5	NA
Comp C-U	10	98	4.5	>100%
	50	98	4.5	
	100	98	4.5	
Comp C-L	10	100	0	>100%
	50	94	5.5	
	100	98	4.5	

Table 3-19. Summary of Water Quality Observations; Water-column Test with *A. bahia*

Treatment	SPP (%)	Dissolved Oxygen (mg/L)			Temperature (°C)			pH (units)			Salinity (ppt)		
		Mean	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max
Control	0	6.3	5.1	7.9	19.3	18.8	19.5	33.1	32.0	34.0	7.8	7.5	7.9
Site Water	0	6.7	5.4	9.3	19.4	18.6	19.8	35.3	34.0	36.0	7.8	7.6	7.9
Comp C-U	10	6.3	4.8	7.7	19.5	19.4	19.9	33.1	32.0	34.0	7.8	7.5	7.9
	50	6.4	5.4	7.9	19.6	19.4	19.9	33.7	33.0	34.0	7.8	7.5	8.0
	100	5.8	5.0	6.4	19.6	19.5	19.8	34.8	34.0	35.0	7.9	7.5	8.3
Comp C-L	10	6.0	5.1	8.2	19.5	19.1	19.9	33.1	32.0	34.0	7.8	7.5	7.9
	50	5.9	4.7	8.1	19.5	19.2	19.8	33.3	33.0	34.0	7.8	7.5	7.9
	100	6.0	4.7	8.1	19.6	19.4	19.8	34.8	34.0	36.0	7.8	7.6	7.9

Table 3-20. Test Condition Summary for *Americamysis bahia*

Test Conditions: <i>A. bahia</i>		
Sample Identification	LA-3 Ref, Comp C-L, Comp C-U	
Date sampled	12/8/2008	
Date received	12/13/2008	
Sample storage	4°C, dark	
Weeks of holding	3 weeks	
Test Species	<i>Americamysis bahia</i>	
Supplier	Aquatic BioSystems	
Date acquired	1/6/2009	
Acclimation/holding	1 day	
Age class	3 days old	
Test Procedures	OTM/ ITM	
Regulatory Program	OTM/ ITM	
Test location	NewFields Northwest Laboratory	
Test type/duration	96-hour SPP	
Test dates	1/7/2009-1/11/2009	
Control water	0.2µm-filtered North Hood Canal sea water	
Test temperature	Recommended: 20 ± 1 °C	Achieved: 18.6 – 19.9°C
Test Salinity	Recommended: 31 ± 2 ppt	Achieved: 32- 37 ppt
Test dissolved oxygen	Recommended: > 3.7 mg/L	Achieved: 6.5- 9.0 mg/L
Test pH	Recommended: 7.8 ± 0.5	Achieved: 7.4-8.2
Control performance standard	Recommended: Control ≤ 10% mortality	Achieved: 4%
Reference Toxicant LC50	233 µg Cu/L	
Acceptable Range	140- 406 µg Cu/L	
Test Lighting	16- hours light, 8-hours dark	
Test chamber	600mL Glass Chamber	
Replicates/treatment	5	
Organisms/replicate	10	
Exposure volume	250mL	
Feeding	Twice daily	
Water renewal	None	
Deviations from Test Protocol	Salinity out of range in all treatments	

3.3.5 RESULTS OF THE WATER-COLUMN TEST WITH MYTILUS SP.

The bivalve larval test was conducted on January 7, 2009 and was validated by 96.8% mean normal development in the controls. The EC50 for the copper reference-toxicant test was 9.69 µg Cu /L for normal development, which was within control chart limits (3.60 – 18.0 µg Cu/L). A summary of test results, water quality observations and an overall summary of the test are presented in Tables 3-21 to 3-23. Bench sheets, including survival in each of the treatment replicates, are presented in Appendix D.

Salinity was out of range for Comp C-U 50 and 100% as well as Comp C-L 50 and 100%. There was no adverse effect on the animals as evidenced by high normal development percentages. Ammonia levels were below NOEC for all treatments. Mean percentage normal survival in the Site Water control was 98.1%, while mean percentage normal in 100% SPP for Comp C-U and Comp C-L were 97.2% and 97.6%, respectively. There were no significant differences between mean normal survival in the 100% SPP for either test composite, relative to the control and the estimated EC₅₀ for both treatments was >100% SPP.

Table 3.21 Summary of Results for the Water-column Test with *Mytilus sp.*

Treatment	SPP (%)	Mean Normal Development	SD	EC50 (%SPP)
Control	0	96.8	1.3	NA
Site Water	0	98.1	0.6	NA
Comp C-U	1	96.5	0.6	>100
	10	97.5	0.7	
	50	97.0	0.9	
	100	97.2	1.4	
Comp C-L	1	97.9	0.5	>100
	10	97.3	0.9	
	50	97.3	0.9	
	100	97.6	0.6	

Table 3-22 Summary of Water Quality Observations, Water-column Test with *Mytilus sp.*

Treatment	SPP (%)	Dissolved Oxygen (mg/L)			Temperature (°C)			pH (units)			Salinity (ppt)		
		Mean	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max
Control	0	7.6	7.5	7.9	16.0	15.5	16.8	7.8	7.8	7.9	32.0	31.0	33.0
Site Water	0	7.9	7.3	9.0	16.0	15.6	16.3	7.8	7.8	7.9	35.0	34.0	36.0
Comp C-U	1	7.6	7.2	8.3	16.0	15.6	16.4	7.9	7.9	8.0	32.3	32.0	33.0
	10	7.5	7.1	8.1	16.1	15.7	16.6	7.9	7.9	8.0	32.3	32.0	33.0
	50	7.2	6.8	7.5	15.9	15.6	16.5	8.0	7.9	8.1	34.0	33.0	35.0
	100	6.9	6.6	7.1	15.9	15.6	16.6	8.1	8.0	8.3	35.3	34.0	37.0
Comp C-L	1	7.3	6.9	7.9	16.0	15.6	16.5	8.1	8.0	8.1	32.3	32.0	33.0
	10	7.6	7.3	8.0	15.9	15.5	16.6	8.0	7.9	8.0	32.7	32.0	33.0
	50	7.6	7.3	8.0	15.8	15.4	16.6	8.0	7.9	8.0	34.7	33.0	36.0
	100	7.6	7.3	8.0	16.1	15.5	16.9	7.9	7.8	8.0	35.0	34.0	36.0

Table 3-23. Test Condition Summary for *Mytilus sp*

Test Conditions: <i>Mytilus sp.</i>		
Sample Identification	LA-3 Ref, Comp C-L, Comp C-U	
Date sampled	12/8/2008	
Date received	12/13/2008	
Sample storage	4°C, dark	
Weeks of holding	3 weeks	
Test Species	<i>Mytilus sp.</i>	
Supplier	Carlsbad Aquafarms	
Date acquired	1/6/2009	
Acclimation/holding	Broodstock held for 1 day	
Age class	Larval	
Age of test animals	<4 hours	
Test Procedures	OTM/ ITM	
Regulatory Program	OTM/ ITM	
Test location	NewFields Northwest Laboratory	
Test type/duration	48-hour SPP	
Test dates	1/7/2009-1/9/2009	
Control water	0.2µm-filtered North Hood Canal sea water	
Test temperature	Recommended: 16 ± 1 °C	Achieved: 15.4 – 16.9°C
Test Salinity	Recommended: 31 ± 2 ppt	Achieved: 31- 36 ppt
Test dissolved oxygen	Recommended: > 4.0 mg/L	Achieved: 6.6- 8.1 mg/L
Test pH	Recommended: 8.0 ± 1	Achieved: 7.8-8.3
Control performance standard	Recommended: Control ≤ 10% mortality	Achieved: 3.2%
Reference Toxicant LC50	9.69 µg Cu/L	
Acceptable Range	3.60- 18.0 µg Cu/L	
Test Lighting	16- hours light, 8-hours dark	
Test chamber	1-L Glass Chamber	
Replicates/treatment	5	
Organisms/replicate	Stocking density = 288.6 embryos per chamber	
Exposure volume	10mL	
Feeding	None	
Water renewal	None	
Deviations	Salinity out of range in all treatments	

3.3.6 BIOACCUMULATION TEST RESULTS

Bioaccumulation tests were initiated on December 16, 2008 using the polychaete worm, *Nephtys caecoides*, and the bent nose clam, *Macoma nasuta*. A summary of test results, water quality observations and an overall summary of the test are presented in Tables 3-24 to 3-26. Bench sheets, including survival in each of the treatment replicates, are presented in Appendix E. The bioaccumulation tests were validated by 95.0% survival in the *N. caecoides* control and 93.6% survival in the *M. nasuta* control. Both species were tested in the same test chambers, therefore only one set of water quality observations are recorded. All water quality parameters were within range.

Mean percentage survival in LA-3 Ref was 96.8% for *M. nasuta* and 86.3% for *N. caecoides*. Mean percentage *N. caecoides* survival were 86.3 and 90.3% for Comp C-L and Comp C-U relatively. Mean percentage *M. nasuta* survival were 64.8 and 99.2% for Comp C-L and Comp C-U. The higher mortality rate for clams in Comp C-L may have been due to the higher percent sand and very low TOC content of 0.05%. However, sufficient tissue was available for all tissue analyses.

Table 3-24. Summary of *M. nasuta* and *N. caecoides* Survival 28-d Bioaccumulation Test

Treatment	<i>Macoma nasuta</i>		<i>Nephtys caecoides</i>	
	Mean Percentage Survival	SD	Mean Percentage Survival	SD
Control	93.6	3.6	95.0	4.2
LA-3 Ref	96.8	3.3	86.3	4.9
Comp C-L	64.8	13.7	86.3	3.8
Comp C-U	99.2	1.8	90.3	4.8

Table 3-25. Summary of Water Quality for the 28- day Bioaccumulation Test

Treatment	Dissolved Oxygen (mg/L)			Temperature (°C)			Salinity (ppt)			pH (pH units)			Flow (mL/30 sec)		
	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max
Control	7.1	5.8	8.0	15.6	15.1	16.1	31.7	31	33	7.6	7.3	8.1	40	38	42
LA-3 Ref	7.1	6.1	8.0	15.6	15.0	16.2	31.7	31	33	7.7	7.3	8.0	40	38	42
Comp C-L	7.1	5.8	7.9	15.5	14.9	15.8	31.7	31	33	7.7	7.3	8.0	40	38	42
Comp C-U	7.1	5.5	7.8	15.5	15.0	15.9	31.7	31	33	7.7	7.4	8.3	40	38	42

Table 3-26. Test Condition Summary for *Macoma nasuta* and *Nephtys caecoides*

Test Conditions		
Sample Identification	LA-3 Ref, Comp C-L, Comp C-U	
Date sampled	12/8/2008	
Date received	12/13/2008	
Sample storage	4°C, dark	
Weeks of holding	1 week	
Test Species	<i>Macoma nasuta</i> and <i>Nephtys caecoides</i>	
Supplier	J & G Gunstone provided clams and John Brezina provided worms	
Date acquired	1/6/2009	
Acclimation/holding time	4 days	
Age class	Adult	
Test Procedures	OTM/ ITM	
Regulatory Program	OTM/ ITM	
Test location	NewFields Northwest Laboratory	
Test type/duration	28-Day Bioaccumulation	
Test dates	12/16/2008-1/13/2009	
Control water	0.2µm-filtered North Hood Canal sea water	
Test temperature	Recommended: 15 ± 1 °C	Achieved: 14.9 – 16.2°C
Test Salinity	Recommended: 32 ± 2 ppt	Achieved: 31- 33 ppt
Test dissolved oxygen	Recommended: > 4.5 mg/L	Achieved: 5.5- 8.0 mg/L
Test pH	Recommended: 7.8 ± 0.5	Achieved: 7.3-8.3
Control performance standard	Recommended: Control ≤ 10% mortality	Achieved: <i>M. nasuta</i> – 6.4% <i>N. caecoides</i> – 5.0%
Test Lighting	16- hours light, 8-hours dark	
Test chamber	10 Gallon Glass Aquarium	
Replicates/treatment	5	
Organisms/replicate	25 clams, 60 worms	
Exposure volume	5 cm of sediment, 30 L seawater	
Feeding	None	
Water renewal	Flow-Through	
Deviations	None	

3.4 TISSUE CHEMICAL ANALYSIS

Bioaccumulation tests were conducted using Comp C-U and Comp C-L, as well as sediment collected from the LA-3 Reference site. The analyte list for tissue residue analysis was based on the chemical concentrations found in the sediments. Based on the sediment chemistry, tissues from the bioaccumulation exposures were analyzed for mercury and lipids. Concentrations found for each replicate in the test treatments and the reference sample are presented in Table 3-26. No mercury was observed in reference sample. Mercury was detectable in *N. caecoides* from Comp C-U and in *M. nasuta* from Comp C-L; however, concentrations found were only slightly above reporting values. There was a significant difference between the concentration of mercury in the clam tissues exposed to Comp C-U, relative to the LA-3 Reference. However, this was likely to the absence of mercury in the LA-3 Reference clam tissues.

Table 3-26. Summary of Mercury Concentrations in Tissues

Treatment	Replicate	<i>Macoma nasuta</i>		<i>Nephtys caecoides</i>	
		Mercury (mg/kg)	Mean Mercury Concentration (mg/kg)	Mercury (mg/kg)	Mean Mercury Concentration (mg/kg)
LA-3 Reference	1	0.01 U	0.010	0.01 U	0.010
	2	0.009 U		0.01 U	
	3	0.009 U		0.01 U	
	4	0.01 U		0.01 U	
	5	0.01 U		0.009 U	
Comp C-U	1	0.011	0.011	0.009	0.010
	2	0.013		0.01 U	
	3	0.011		0.011	
	4	0.011		0.01 U	
	5	0.01		0.009 U	
Comp C-L	1	0.009 U	0.009	0.01 U	0.0
	2	0.009 U		0.009 U	
	3	0.01 U		0.009 U	
	4	0.009 U		0.009 U	
	5	0.01 U		0.01 U	

4 DISCUSSION

As part of the planning process for Marina Park, NewFields LLC conducted an evaluation of the proposed dredged material from area of the proposed marina. The objective of this sampling and analysis program was to characterize the dredged materials from three dredged material management areas (Areas A, B, and C) within the Marina Park marina project area. The primary disposal options under consideration for the dredged materials are 1) beach nourishment under Regional General Permit Number 67 or an individual permit for unconfined aquatic disposal alternative as governed by the U.S. Army Corps of Engineers (USACE)/U.S. Environmental Protection Agency (USEPA) guidelines set forth in the Inland Testing Manual (ITM; USACE/USEPA 1998), and 2) ocean disposal at disposal site LA-3 based on guidance provided by the Ocean Testing Manual (OTM; USACE/USEPA 1991).

Evaluation criteria were based on the ITM/RGP-67 guidance for nearshore disposal and OTM guidance for open ocean disposal at the LA-3 disposal site. Under the RGP-67 and ITM, sediment is suitable for beach nourishment projects or nearshore placement if the sediment is >80% sand and gravel, is free from chemical contamination, is not plastic (a measure of cohesiveness), and is not likely cause adverse aesthetic effects. In order to determine whether test sediments were free of chemical contamination, chemical concentrations in test sediments were compared to National Oceanographic and Atmospheric Administration (NOAA) effects-based guidance values called Effects-Range Low (ERL) and Effects-Range Median (ERM). The ERL represents the 10th percentile in NOAA effects data base and the ERM represents the 50th percentile. While not criteria, these guidance values provide an indication of whether chemical concentrations are sufficient to predict benthic community effects. If the ERL/ERM values are exceeded, further biological testing might be required as directed by the ITM.

Under the OTM, sediment is suitable for placement in an open-ocean disposal site if it does not exceed the limiting permissible concentration (LPC) for the disposal site. The LPC is based on the sediment chemistry results, toxicity tests, and bioaccumulation test and comparisons to the disposal site reference site (in this case LA-3 Reference). As above, chemical concentrations were screened using the NOAA ERL and ERM values. For benthic toxicity tests, the LPC was defined as: no significant toxicity, relative to the LA-3 Reference and survival within 10% of the reference for the polychaete test and 20% for the amphipod test. For the SPP tests, the LPC was based on a comparison of survival or normal development (larval test only) in the 100% SPP of the test treatments with that of the control seawater. If there is a significant difference, then the median lethal concentration (LC₅₀) for the test treatments is compared with a modeled concentration of SPP at the boundary of the disposal site. Concentrations of targeted chemical analytes in the tissues exposed to test sediments are first compared to the tissues exposed to the LA-3 Reference sediment and second compared to guidance values from the Food and Drug Administration (FDA) and USEPA (2000). Sediment treatments that do not exceed the LPC for the LA-3 disposal site would meet the requirements for disposal at LA-3.

The following discussion evaluates the physical, chemical, and biological data for each composite relative to the two disposal options. In each case the USACE and EPA will make a final determination.

Area A Composites (Comp A-U and Comp A-L):

Area A included that portion of the site currently occupied by the mobile home park. Sediments in the upper composite represented that material from 5 feet below the ground surface (approximately +5 ft. MLLW) to a depth of approximately -4 to 5 ft. MLLW. Soils above +5 ft. MLLW will be used as construction-fill on-site. Sediments in the lower composite represented that material from -4 to -5 MLLW to -14 Ft. MLLW and appeared to represent the ancient Bay sands that underlay much of Lower Newport Bay.

Sediment in the Comp A-U was characterized by 96% sand and gravel, with 0.15% TOC. Sands were not plastic, had very low levels of sulfides and ammonia, and no detectable oil and grease. Metals were either undetected (cadmium, lead, mercury, selenium, and silver) or detected at concentrations well below ERL values (arsenic, chromium, copper, nickel and zinc). All metals concentrations were well below those of the LA-3 Reference sediment. PAHs, pesticides, PCBs, phthalates, and tributyltin were not detected in the Comp A-U sediment.

Sediment in the Comp A-L was characterized by 99% sand and gravel, with 0.08% TOC. Sands were not plastic, had very low levels of ammonia, and no detectable oil and grease or sulfides. Metals were either undetected (cadmium, lead, nickel mercury, selenium, and silver) or detected at concentrations well below ERL values (arsenic, chromium, copper, and zinc). All metals concentrations were well below those of the LA-3 Reference sediment. PAHs, pesticides, PCBs, phthalates, and tributyltin were not detected in the Comp A-L sediment.

The upper and lower sediments of Area A from +5 ft. MLLW to -14 ft. MLLW would meet the criteria for the RGP-67 and ocean disposal at LA-3, as defined above.

Area B Composites (Comp B-U and Comp B-L):

Area B included the beach in front of the mobile home park to the 0 ft. MLLW tide line. The upper composite represented sediment from the beach face to a depth of -4 to -7 ft. MLLW and included hydraulic-fill sands (Terra Costa 2008). Sediments in the lower composite represented that material from -4 to -5 MLLW to -14 Ft. MLLW and were similar to the ancient Bay sands found in lower portion of Area A.

Sediment in the Comp B-U was characterized by 96% sand and gravel, with 0.02% TOC. Sands were not plastic, had very low levels of ammonia, and no detectable oil and grease or sulfides. Metals were either undetected (selenium, and silver) or detected at concentrations well below ERL values (arsenic, cadmium, chromium, copper, lead mercury, nickel and zinc). All metals concentrations were well below those of the LA-3 Reference sediment. Some PAHs were detected in Comp B-U sediment, however, total PAHs were three orders of magnitude below the ERL. Pesticides, PCBs, phthalates, and tributyltin were not detected in the Comp B-U sediment.

Sediment in the Comp B-L was characterized by 98% sand and gravel, with 0.08% TOC. Sands were not plastic, had very low levels of ammonia, and no detectable oil and grease or sulfides. Metals were either undetected (cadmium, lead, mercury, selenium, and silver) or detected at concentrations well below ERL values (arsenic, chromium, copper, nickel, and zinc). All metals concentrations were well below those of the LA-3 Reference sediment. PAHs, pesticides, PCBs, phthalates, and tributyltin were not detected in the Comp B-L sediment.

The upper and lower portions of Area B would meet the criteria for the RGP-67 and ocean disposal at LA-3, as defined above.

Area C Composites (Comp C-U and Comp C-L):

Area C included that portion of the site below the 0 ft. MLLW tide line. Area C included a nearshore component (0 ft. to approximately -5 ft. MLLW) where the bulk of the proposed dredge volume is located and a channel component (-6 ft. to approximately -10 ft. MLLW). The upper Area C composite represented that portion of the cores from the sediment surface to -10 ft. to -12 ft. MLLW. Sediment in the upper segment in the nearshore area was comprised of a sand layer, overlaying a two to three foot layer of silt and was bounded at the bottom by the ancient Bay sands. The upper segment of the channel cores was comprised of silts and clays.

The lower segment was similar throughout the Area and was comprised of the ancient Bay sands that were observed in Areas A and B. The lower segment represented that portion of the cores from -10 to -12 ft. MLLW to project depth.

Sediment in the Comp C-U was characterized by 78% sand and gravel, with 0.68% TOC. Sediment was slightly plastic, with an Atterberg Limit of 16 cm, low levels of ammonia, and no detectable oil and grease or sulfides. With the exception of mercury, metals were either undetected (selenium and silver) or detected at concentrations below ERL values (arsenic, cadmium, chromium, copper, lead, nickel and zinc) and below those of the LA-3 Reference sediment. Some PAHs were detected in Comp C-U sediment; however, total detected PAHs were 108 µg/kg, less than 3% of the ERL (4,022 µg/kg). Pesticides, PCBs, phthalates, and tributyltin were not detected in the Comp C-U sediment.

Sediment from the lower Area C composite was very similar to the lower composites from Areas A and B, with 99% sand and 0.05% TOC. Metals were either undetected or detected very near the detection limits. Pesticides, PCBs, tributyltin, TRPH, oil and grease, phthalates, and PAHs were not detected in the Comp C-L.

No toxicity was observed in either of the benthic tests. Survival in the amphipod test ranged from 87-92%. Control survival met the standard, proving a valid test, and there was no significant difference between test treatments and the reference. Survival in the polychaete test for both test treatments was 84%. Similarly, control survival met the standard and there was no significant difference between test treatments and the reference site.

There was also no indication of toxicity in the water-column tests. For the fish and mysid tests, survival was >88% in the 100% SPP and there were not significant differences between the 0% and 100% SPP. Mean normal development of larval mussels was slightly greater in the test treatments than in the dilution water and there were no significant differences between the 0% and 100% SPP treatments. As outlined in the ITM, dredged material does not exceed the water-column LPC if survival in 100% elutriate is not >10% less than that of dilution water (USEPA 1998). None of the treatments exceeded these guidelines.

Area C composites and the LA-3 Reference site were evaluated for bioaccumulation potential. The chemistry analyte list for tissues exposed to the Area C composites included mercury and lipids. No mercury was detected in either the reference material or in Comp C-L. Mercury was either undetected or detected at the detection limit (0.01 to 0.013 mg/kg) in tissues exposed to Comp C-U. The mean tissue concentrations in clams and worms exposed to Comp C-U were within 20% of the detection limit, the standard margin of error for this analytical method. The tissues concentrations of mercury were also well below the FDA limit of 1.0 mg/kg and the risk-based guidance value of 0.3 mg/kg (USEPA 2000).

Sediment from the Area C upper composite would not meet the requirement for beach nourishment, with <80% sand and gravel. However, this material would meet the requirements for open-ocean disposal. With the exception of mercury, concentrations for chemicals of potential concern were either

not detected or detected at concentrations below those of the LA-3 Reference site. Mercury was detected above the ERL, but below the ERM. No significant toxicity was observed in any of the biological tests and no significant bioaccumulation of mercury was observed in the bioaccumulation tests.

Sediment from the lower Area C composite met the requirements for beach nourishment and ocean disposal. However, this layer occurs close to the proposed dredge depth of -12 ft. MLLW and it is unlikely that the layer could be easily separated from the overlying sediment during dredging.

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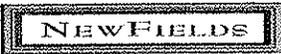
Appendix A
Field Logs and Core Photographs

PROJECT/SURVEY Newport-Marina Park		DATE 11/26/08	PROJECT MANAGER B. Gardiner	RECORDER T. Schuh
STATION ID MP-1	NAV DATUM NAD83	LATITUDE 33° 36.474' N	LONGITUDE 117° 56.325' W	
WATER DEPTH (FT)	TIDE (FT)	MLLW (FT) = WATER DEPTH - TIDE		SAP DEPTH (FT)
TARGET CORE LENGTH (FT) (SAP DEPTH - MLL)	FINAL CORE LENGTH (FT)	PENETRATION (FT)	CORE LENGTH COLLECTED FOR ANALYSIS (FT)	
25'	20'	25'	20'	
CORE DIAMETER (IN) 1 1/2	ATTEMPT 1 of 1	TIME STARTED 1045	TIME FINISHED 1200	

5' BGS

PEN. DEP. (FT)	RETRY. DEP. (FT)	SEDIMENT TYPE	ODOR	COLOR (HUE VALUE/CHROMA)	SAMPLE ID BY DEPTH	MISC
1	1	coarse sand	none	very pale brown	↑	
2	2	shell			↑	
3	3	sand	none	dark gray	↑	
4	4	missing		3-4.5 missing	MP-1 U	
5	5				↓	
6	6				↓	
7	7				↓	
8	8				↓	
9	9			8'-9' missing	↓	
10	10	↑		↑	↑	
11	11				↑	
12	12				↑	
13	13	very coarse sand	none		↑	
14	14	sand		very pale	↑	
15	15	shell		brown	↑	
16	16				MP-1 L	
17	17				↑	
18	18	extremely coarse			↑	
19	19	sand, gr			↑	
20	20	shell			↓	z-layer

NOTES Hand augured to 5-ft. core collected from 5-25-ft



SEDIMENT CORING LOG

PROJECT/SURVEY <i>Newport - Marina Park</i>		DATE <i>11/26/08</i>	PROJECT MANAGER <i>B. Gardiner</i>	RECORDER <i>T. Schwin</i>
STATION ID MP-2		NAV DATUM NAD83	LATITUDE 33° 36.479' N	LONGITUDE 117° 55.338' W
WATER DEPTH (FT)		TIDE (FT)	MLLW (FT) = WATER DEPTH - TIDE	SAP DEPTH (FT)
TARGET CORE LENGTH (FT) (SAP DEPTH - MLL)		FINAL CORE LENGTH (FT)	PENETRATION (FT)	CORE LENGTH COLLECTED FOR ANALYSIS (FT)
<i>25'</i>		<i>20'</i>	<i>25'</i>	<i>20'</i>
CORE DIAMETER (IN) 1 1/2		ATTEMPT 1 of 1	TIME STARTED 1230	TIME FINISHED 115

PEN. DEP. (FT)	RETRY. DEP. (FT)	SEDIMENT TYPE	ODOR	COLOR (HUE VALUE/CHROMA)	SAMPLE ID BY DEPTH	MISC
1	1	↑	<i>Sample missing</i>	<i>0-2' (compressed)</i>		
2	2	↓				
3	3	<i>Sand</i>	<i>none</i>	<i>yellow to</i>		
4	4	↑		<i>gray</i>		
5	5	↑ <i>no sample in</i>		4-6 ft. interval		
6	6	↓		<i>gray</i>		
7	7	<i>Sand</i>			MPZ-U	
8	8					
9	9	←			↓	
10	10	<i>coarse sand</i>			↑	
11	11			<i>Some red (iron) in</i>		
12	12		<i>none</i>	<i>light brown (very pale brown)</i>		
13	13			<i>7.5 YR PINK</i>	MPZ-L	
14	14			<i>7-4</i>		
15	15					
16	16					
17	17					
18	18					
19	19				↓	
20	20				2 layer	

NOTES
Hand augured to 5 ft. Core collected from 5-25 ft

PROJECT/SURVEY Newport/Marina Park		DATE 11/25/08	PROJECT MANAGER B. Gardiner	RECORDER T. Schuh			
STATION ID MP-3		NAV DATUM NAD83	LATITUDE 33° 36.46' N	LONGITUDE 117° 55.312' W			
WATER DEPTH (FT)		TIDE (FT)	MLLW (FT) = WATER DEPTH - TIDE	SAP DEPTH (FT)			
TARGET CORE LENGTH (FT) (SAP DEPTH - MLL)		FINAL CORE LENGTH (FT)	PENETRATION (FT)	CORE LENGTH COLLECTED FOR ANALYSIS (FT)			
25'		20'	25'	20'			
CORE DIAMETER (IN) 1 1/2		ATTEMPT 1 of 1	TIME STARTED 900	TIME FINISHED 1030			
PEN. DEP. (FT)	RETR. DEP. (FT)	SEDIMENT TYPE	ODOR	COLOR (HUE VALUE/CHROMA)	SAMPLE ID BY DEPTH	MISC	
1	1	coarse sand		very pale brown	↑		
2	2	silty sand					
3	3	sand					
4	4	sand			MP-3U		
5	5				↓		
6	6						
7	7	coarse sand shell					
8	8	↓		9-10 missing			
9	9						
10	10	↑		very pale brown	↑		
11	11	very coarse					
12	12	sand			↓		
13	13	shell				MPBL	
14	14	hard					
15	15						
16	16						
17	17						
18	18						
19	19						
20	20	very coarse w/sh		very pale brown	z-layer		

NOTES

* hand augured to 5 ft. core collected from 5 ft - 25 ft
 station moved slightly to where accessible to drilling rig

SEDIMENT CORING LOG

PROJECT/SURVEY <i>Newport - Marina Park</i>		DATE <i>11/26/08</i>	PROJECT MANAGER <i>B. Gardiner</i>	RECORDER <i>T. Schuh</i>
STATION ID MP-5		NAV DATUM NAD83	LATITUDE 33° 36.494' N	LONGITUDE 117° 55.326' W
WATER DEPTH (FT)		TIDE (FT)	MLLW (FT) = WATER DEPTH - TIDE	SAP DEPTH (FT)
TARGET CORE LENGTH (FT) (SAP DEPTH - MLL)		FINAL CORE LENGTH (FT)	PENETRATION (FT)	CORE LENGTH COLLECTED FOR ANALYSIS (FT)
<i>25'</i>		<i>20'</i>	<i>25'</i>	<i>20'</i>
CORE DIAMETER (IN) 1 1/2		ATTEMPT 1 of 1	TIME STARTED 1430	TIME FINISHED 1530

PEN. DEP. (FT)	RETRV. DEP. (FT)	SEDIMENT TYPE	ODOR	COLOR (HUE, VALUE/CHROMA)	SAMPLE ID BY DEPTH	MISC
1	1	<i>0-1' missing</i>			↑	
2	2	<i>coarse</i>		<i>very light</i>		
3	3	<i>sand</i>		<i>brown</i>		
4	4	<i>sand</i>		<i>gray</i>		
5	5	<i>silt</i>				
6	6				<i>MPS-U</i>	
7	7	<i>sand</i>				
8	8					
9	9					
10	10					
11	11					
12	12	<i>X</i>			↓	
13	13	<i>↑</i>			↑	
14	14	<i>very</i>		<i>DARK</i>		
15	15	<i>coarse</i>		<i>gray</i>	<i>MPS-L</i>	
16	16	<i>sand</i>				
17	17	<i>silt</i>				
18	18					
19	19				↓	
20	20					

NOTES
hand augured to 5ft. Core collected from 5-25 ft. Drilled thru sidewalk.

SEDIMENT CORING LOG

PROJECT/SURVEY Newport - Marina Park		DATE 11/26/08	PROJECT MANAGER B. Gardiner	RECORDER T. Schuh
STATION ID MP 6a	NAV DATUM NAD83	LATITUDE 33° 36.498' N	LONGITUDE 117° 55.325' W	
WATER DEPTH (FT)	TIDE (FT)	MLLW (FT) = WATER DEPTH - TIDE	SAP DEPTH (FT)	
TARGET CORE LENGTH (FT) (SAP DEPTH - MLL)	FINAL CORE LENGTH (FT)	PENETRATION (FT)	CORE LENGTH COLLECTED FOR ANALYSIS (FT)	
30'	20'	20'	20'	
CORE DIAMETER (IN) 1 1/2	ATTEMPT 1 of 1	TIME STARTED 1720	TIME FINISHED 1750	

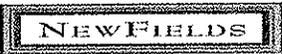
PEN. DEP.(FT)	RETRV. DEP.(FT)	SEDIMENT TYPE	ODOR	COLOR (HUE VALUE/CHROMA)	SAMPLE ID BY DEPTH	MISC
1	1	dry sand	none	light tan		↑
2	2	coarse		very pale brown		
3	3					
4	4			(munsel 8-3 → 7-3)		
5	5			10YR		
6	6				5-6' missing	
7	7	wet sand	none	light tan		
8	8	coarse		pale brown		
9	9					
10	10					
11	11					↓
12	12					
13	13		none	dark grey	12-13' missing	
14	14			(munsel 1N-4)		
15	15			2.5YR		
16	16					
17	17			gray		
18	18	very coarse sand	none	munsel 5-1		
19	19	coarse sand		10YR		
20	20	shell wash				

NOTES
 mp-6a was originally called MP-6 on SAP. Another station added on upper beach and named MP-6b. See attached map. Core collected from surface to 20 ft.

PROJECT/SURVEY <i>Newport - Marina Park</i>		DATE <i>11/26/08</i>	PROJECT MANAGER <i>B. Gardner</i>	RECORDER <i>T. Schuh</i>
STATION ID MP-66		NAV DATUM NAD83	LATITUDE 33°36.495'N	LONGITUDE 117°55.313'W
WATER DEPTH (FT)		TIDE (FT)	MLLW (FT) = WATER DEPTH - TIDE	SAP DEPTH (FT)
TARGET CORE LENGTH (FT) (SAP DEPTH - MLL)		FINAL CORE LENGTH (FT)	PENETRATION (FT)	CORE LENGTH COLLECTED FOR ANALYSIS (FT)
<i>20'</i>		<i>20'</i>	<i>20'</i>	<i>20'</i>
CORE DIAMETER (IN) 1 1/2		ATTEMPT 1 of 1	TIME STARTED 1800	TIME FINISHED 1830

PEN. DEP. (FT)	RETRV. DEP. (FT)	SEDIMENT TYPE	ODOR	COLOR (HUE, VALUE/CHROMA)	SAMPLE ID BY DEPTH	MISC
1	1	coarse sand	none	light		
2	2	sand	↑	v. pale		
3	3		↑	brown	6b-U	
4	4	small amounts of shell hash	↑	(munsell)	↑ ↓	
5	5		↑		↑ 4.5-6'	missing
6	6	shell hash	↑		↓	
7	7		↑			
8	8		↑			
9	9		↑			
10	10		↑			
11	11	sand	none	dark gray (#4)	6b-L	
12	12	some silt		gray (#4)	12-13	missing
13	13	shell hash		(munsell)		
14	14					
15	15					
16	16					
17	17	very coarse sand		gray		
18	18	sand		5-1 10YR		
19	19	silt				
20	20					

NOTES
 Station added a coordinates located to correspond to map location. See attached map. Core collected from surface to 20 ft.



SEDIMENT CORING LOG

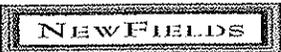
* moved to visual location on map -

coordinates were off.

PROJECT/SURVEY Newport - Marina Park		DATE 11/26/08	PROJECT MANAGER B. Gardiner	RECORDER T. Schuh
STATION ID MP-7	NAV DATUM NAD83	LATITUDE 33° 36.507' N	LONGITUDE 117° 55.312' W	
WATER DEPTH (FT)	TIDE (FT)	MLLW (FT) = WATER DEPTH - TIDE		SAP DEPTH (FT)
TARGET CORE LENGTH (FT) (SAP DEPTH - MLL)	FINAL CORE LENGTH (FT)	PENETRATION (FT)	CORE LENGTH COLLECTED FOR ANALYSIS (FT)	
20'	20'	20'	20'	
CORE DIAMETER (IN) 1 1/2	ATTEMPT 1 of 1	TIME STARTED 1540	TIME FINISHED 1630	

PEN. DEP. (FT)	RETRV. DEP. (FT)	SEDIMENT TYPE	ODOR	COLOR (HUE, VALUE/CHROMA)	SAMPLE ID BY DEPTH	MISC
1	1	coarse	none	very pale	↑	
2	2	sand		brown	MP 7-U	
3	3	shell hash		8-3 → 7-3		2-2.5 missing
4	4	↓		10YR		
5	5					
6	6	finer				
7	7	sand				
8	8					8.5-10 missing
9	9					
10	10					
11	11	↓				
12	12	↑		*	*	12-2.5 missing
13	13			lighter		
14	14	very coarse sand		gray	MP 7-L	
15	15			brown		
16	16	plexifol		Munsell		
17	17	shell hash		dark brown		
18	18			7.5YR 4-2	2-layer	
19	19					
20	20					

NOTES
 See * @ top of page. Core collected from surface to 20 ft. ~~No head~~



SEDIMENT CORING LOG

* coordinates moved to match map visual loca.

PROJECT/SURVEY Newport - Marina Park			DATE 11/26/08		PROJECT MANAGER B. Gardiner		RECORDER T. Schuh	
STATION ID MP-8			NAV DATUM NAD83		LATITUDE 33° 36.510' N		LONGITUDE 117° 55.336' W	
WATER DEPTH (FT)			TIDE (FT)		MLLW (FT) = WATER DEPTH - TIDE		SAP DEPTH (FT)	
TARGET CORE LENGTH (FT) (SAP DEPTH - MLL)			FINAL CORE LENGTH (FT)		PENETRATION (FT)		CORE LENGTH COLLECTED FOR ANALYSIS (FT)	
20'			20'		20'		20'	
CORE DIAMETER (IN) 1 1/2			ATTEMPT 1 of 1		TIME STARTED 1640		TIME FINISHED 1715	
PEN. DEP. (FT)	RETRY. DEP. (FT)	SEDIMENT TYPE	ODOR	COLOR (HUE VALUE/CHROMA)		SAMPLE ID BY DEPTH		MISC
1	1	coarse sand	none	munsell		missing upper 6"		
2	2	with silt		10YR 5-3				
3	3	and		Brown				
4	4					MP 8 upper		
5	5							
6	6							
7	7							
8	8	Sand			↓ some grey			
9	9				dark grey			
10	10							
11	11					MP 8 lower		
12	12					[12-14 missing]		
13	13	very						
14	14	coarse sand						
15	15	with silt			↑ grey			
16	16							
17	17							
18	18					Z-layer		Z-layer
19	19							
20	20							

NOTES
 See * at top of page. Core collected from surface to 20 ft.



SEDIMENT CORING LOG

PROJECT/SURVEY <i>Manana park</i>		DATE <i>12/8/08</i>	PROJECT MANAGER <i>FWJB</i>	RECORDER <i>FWJB</i>
STATION ID <i>MP9</i>	NAV DATUM NAD83	LATITUDE <i>33 36515</i>	LONGITUDE <i>117 55.361</i>	
WATER DEPTH (FT) <i>4.6 - 3.15"</i>	TIDE (FT) <i>4.0</i>	MLLW (FT) = WATER DEPTH - TIDE <i>+1.0</i>	SAP DEPTH (FT) <i>14</i>	
TARGET CORE LENGTH (FT) (SAP DEPTH - MLLW)	FINAL CORE LENGTH (FT)	PENETRATION (FT)	CORE LENGTH COLLECTED FOR ANALYSIS (FT)	
CORE DIAMETER (IN) <i>1 1/2</i>	ATTEMPT <i>of</i>	TIME STARTED <i>9:07</i>	TIME FINISHED	

PEN. DEP.(FT)	RETRV. DEP.(FT)	SEDIMENT TYPE	ODOR	COLOR (HUE, VALUE/CHROMA)	SAMPLE ID BY DEPTH	MISC
1	1	↑				
2	2	<i>hard</i>	<i>none</i>	<i>gray</i>	<i>MP9-U</i>	
3	3	↓				
4	4					
5	5					
6	6					
7	7					
8	8					
9	9					
10	10					
11	11					
12	12					
13	13					
14	14					
15	15					
16	16					
17	17					
18	18					
19	19					
20	20					

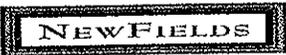
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SEDIMENT CORING LOG

PROJECT/SURVEY <i>Marina Park</i>		DATE <i>12-8-08</i>	PROJECT MANAGER <i>BWG</i>	RECORDER <i>BWG</i>
STATION ID <i>MP-10</i>	NAV DATUM NAD83	LATITUDE <i>33 36.525</i>	LONGITUDE <i>117 55.363</i>	
WATER DEPTH (FT) <i>-3</i>	TIDE (FT) <i>-1.1</i>	MLLW (FT) = WATER DEPTH - TIDE <i>4.1</i>	SAP DEPTH (FT) <i>14.5</i>	
TARGET CORE LENGTH (FT) (SAP DEPTH - MLLW) <i>10.4</i>	FINAL CORE LENGTH (FT) <i>8.0</i>	PENETRATION (FT) <i>12.0</i>	CORE LENGTH COLLECTED FOR ANALYSIS (FT) <i>8.0 (7.5)</i>	
CORE DIAMETER (IN) 1 1/2	ATTEMPT of	TIME STARTED <i>1:30 1100</i>	TIME FINISHED	

PER. DEP.(FT)	RETR. DEP.(FT)	SEDIMENT TYPE	ODOR	COLOR (HUE VALUE/CHROMA)	SAMPLE ID BY DEPTH	MISC
1	1	<i>coarse sand</i>	<i>none</i>	<i>dark</i>		
2	2					
3	3			<i>grey</i>		
4	4	<i>silty sand</i>				
5	5					
6	6	<i>silt</i>				
7	7					
8	8	<i>sand plug - lost during retrieval</i>			<i>- very coarse sand 6"</i>	
9	9					
10	10					
11	11					
12	12					
13	13					
14	14					
15	15					
16	16					
17	17					
18	18					
19	19					
20	20					

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SEDIMENT CORING LOG

PROJECT/SURVEY <i>marina park</i>		DATE <i>12/8/08</i>	PROJECT MANAGER <i>BWS</i>	RECORDER <i>BWS</i>
STATION ID <i>MP11</i>	NAV DATUM <i>NAD83</i>	LATITUDE <i>33 36.527</i>	LONGITUDE <i>117.85.362</i>	
WATER DEPTH (FT) <i>7.5</i>	TIDE (FT) <i>0.0</i>	MLLW (FT) = WATER DEPTH - TIDE <i>7.5</i>	SAP DEPTH (FT) <i>14.5</i>	
TARGET CORE LENGTH (FT) (SAP DEPTH - MLL)	FINAL CORE LENGTH (FT) <i>7.0</i>	PENETRATION (FT) <i>7.0 (14.5)</i>	CORE LENGTH COLLECTED FOR ANALYSIS (FT) <i>7.0</i>	
CORE DIAMETER (IN) <i>1 1/2</i>	ATTEMPT <i>of</i>	TIME STARTED <i>4:45</i>	TIME FINISHED	

PEN. DEP.(FT)	RETRV. DEP.(FT)	SEDIMENT TYPE	ODOR	COLOR (HUE, VALUE/CHROMA)	SAMPLE ID BY DEPTH	MISC
1	1	<i>sand</i>		<i>↑</i>	<i>↑</i>	
2	2	<i>sand</i>		<i>dk</i>	<i>MP11U</i>	
3	3	<i>silt</i>	<i>none</i>	<i>any</i>	<i>↓</i>	
4	4	<i>silt</i>		<i>↓</i>	<i>↓</i>	
5	5	<i>silt/sand</i>		<i>↓</i>	<i>↓</i>	
6	6	<i>very coarse sand</i>		<i>↓</i>	<i>MP11L</i>	
7	7	<i>very coarse sand</i>		<i>↓</i>		
8	8					
9	9					
10	10					
11	11					
12	12					
13	13					
14	14					
15	15					
16	16					
17	17					
18	18					
19	19					
20	20					

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SEDIMENT CORING LOG

PROJECT/SURVEY <i>Mannon park</i>		DATE <i>12.8.08</i>	PROJECT MANAGER <i>Bob</i>	RECORDER <i>Bob</i>
STATION ID <i>MP-12</i>	NAV DATUM NAD83	LATITUDE	LONGITUDE	
WATER DEPTH (FT) <i>3-0 4.0</i>	TIDE (FT) <i>-1.0</i>	MLLW (FT) = WATER DEPTH - TIDE <i>4.5</i>	SAP DEPTH (FT) <i>14.5 13.5 14.5</i>	
TARGET CORE LENGTH (FT) (SAP DEPTH - MLL)	FINAL CORE LENGTH (FT) <i>6.6+1</i>	PENETRATION (FT) <i>8' 7.0</i>	CORE LENGTH COLLECTED FOR ANALYSIS (FT) <i>7.0 6.5 6.0</i>	
CORE DIAMETER (IN) 1 1/2	ATTEMPT of	TIME STARTED <i>1:30</i>	TIME FINISHED	

PEN. DEP.(FT)	RETR. DEP.(FT)	SEDIMENT TYPE	ODOR	COLOR (HUE VALUE/CHROMA)	SAMPLE ID BY DEPTH	MISC
1	1	<i>↑</i> coarse sand		<i>↑</i>	<i>MP12U</i>	
2	2	sand shell		Dark grey	<i>↓</i>	
3	3	<i>↓</i>	<i>none</i>		<i>↓</i>	
4	4	silty sand			<i>↓</i>	
5	5	sand			<i>MP12U</i>	<i>(12U)</i>
6	6	silt			<i>all (MP)</i>	
7	7	<i>+</i>			<i>↓</i>	
8	8	<i>↓</i>		<i>(compressed)</i>	<i>↓</i>	<i>1 ft left in catcher</i>
9	9					<i>very coarse sand</i>
10	10					
11	11					
12	12					
13	13					
14	14					
15	15					
16	16					
17	17					
18	18					
19	19					
20	20					

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SEDIMENT CORING LOG

PROJECT/SURVEY <i>Marina park</i>		DATE <i>12/8/08</i>	PROJECT MANAGER <i>Pawg</i>	RECORDER <i>Buz</i>
STATION ID <i>MP-13</i>		NAV DATUM <i>NAD83</i>	LATITUDE <i>33 36.522</i>	LONGITUDE <i>117 55.355</i>
WATER DEPTH (FT) <i>7.2</i>		TIDE (FT) <i>-1.1</i>	MLLW (FT) = WATER DEPTH - TIDE <i>8.3</i>	SAP DEPTH (FT) <i>14.5</i>
TARGET CORE LENGTH (FT) (SAP DEPTH - MLL)		FINAL CORE LENGTH (FT) <i>7.0</i>	PENETRATION (FT)	CORE LENGTH COLLECTED FOR ANALYSIS (FT)
CORE DIAMETER (IN) <i>1 1/2</i>		ATTEMPT <i>of</i>	TIME STARTED <i>3:55</i>	TIME FINISHED

PEN. DEP.(FT)	RETRV. DEP.(FT)	SEDIMENT TYPE	ODOR	COLOR (HUE VALUE/CHROMA)	SAMPLE ID BY DEPTH	MISC
1	1	<i>wet silt</i>	<i>2</i>	<i>↑</i>	<i>↓</i>	
2	2	<i>sand silt</i>	<i>none</i>	<i>lk</i>	<i>MP 13 u</i>	
3	3	<i>silt</i>	<i>↓</i>	<i>gray</i>	<i>↓</i>	
4	4	<i>↓</i>	<i>↓</i>	<i>↓</i>	<i>↓</i>	
5	5	<i>coarse sand</i>	<i>↓</i>	<i>↓</i>	<i>MP 13 c</i>	
6	6	<i>↓</i>	<i>↓</i>	<i>↓</i>	<i>↓</i>	
7	7	<i>↓</i>				
8	8					
9	9					
10	10					
11	11					
12	12					
13	13					
14	14					
15	15					
16	16					
17	17					
18	18					
19	19					
20	20					

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SEDIMENT CORING LOG

PROJECT/SURVEY <i>marina park</i>		DATE <i>12-8-08</i>	PROJECT MANAGER <i>BWG</i>	RECORDER <i>BWG</i>
STATION ID <i>MP-14</i>		NAV DATUM NAD83	LATITUDE	LONGITUDE
WATER DEPTH (FT) <i>41</i>	TIDE (FT) <i>-1.5'</i>	MLLW (FT) = WATER DEPTH - TIDE <i>+5.5</i>		SAP DEPTH (FT) <i>14.5</i>
TARGET CORE LENGTH (FT) (SAP DEPTH - MLLW) <i>9.0</i>	FINAL CORE LENGTH (FT) <i>6.5</i>	PENETRATION (FT) <i>6.5</i>	CORE LENGTH COLLECTED FOR ANALYSIS (FT) <i>6.0</i>	
CORE DIAMETER (IN) 1 1/2	ATTEMPT of	TIME STARTED <i>220</i>	TIME FINISHED	

PEN. DEP.(FT)	RETRV. DEP.(FT)	SEDIMENT TYPE	ODOR	COLOR (HUE VALUE/CHROMA)	SAMPLE ID BY DEPTH	MISC
1	1	<i>silty sand</i>				
2	2	<i>coarse sand</i>			<i>MP14 U</i>	
3	3	↓	<i>none</i>	<i>dk gray</i>		
4	4	↓				
5	5	<i>firm silt</i>				
6	6	↓				
7	7	<i>sand plug</i>			<i>MP14L (sand)</i>	
8	8					
9	9					
10	10					
11	11					
12	12					
13	13					
14	14					
15	15					
16	16					
17	17					
18	18					
19	19					
20	20					

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SEDIMENT CORING LOG

PROJECT/SURVEY <i>Manna Park</i>		DATE <i>12/8</i>	PROJECT MANAGER <i>BWT</i>	RECORDER <i>BWT</i>
STATION ID <i>MP15</i>	NAV DATUM NAD83	LATITUDE <i>33 36.539</i>		LONGITUDE <i>117 55.305</i>
WATER DEPTH (FT) <i>5.5</i>	TIDE (FT) <i>-1.1</i>	MLLW (FT) = WATER DEPTH - TIDE <i>6.6</i>		SAP DEPTH (FT) <i>14.5</i>
TARGET CORE LENGTH (FT) (SAP DEPTH - MLL)	FINAL CORE LENGTH (FT) <i>8.0</i>	PENETRATION (FT) <i>14.5</i>	CORE LENGTH COLLECTED FOR ANALYSIS (FT) <i>8.0</i>	
CORE DIAMETER (IN) <i>1 1/2</i>	ATTEMPT <i>(1 of 1)</i>	TIME STARTED <i>330</i>	TIME FINISHED	

PER. DEP.(FT)	RETRV. DEP.(FT)	SEDIMENT TYPE	ODOR	COLOR (HUE VALUE/CHROMA)	SAMPLE ID BY DEPTH	MISC
1	1	Silt				
2	2	↓	<i>none</i>	<i>gray</i>		
3	3	↓				
4	4	<i>Very coarse</i>				
5	5	<i>Sand</i>				
6	6	<i>w/ shell</i>				
7	7	↓				
8	8	<i>Izlayer</i>				
9	9					
10	10					
11	11					
12	12					
13	13					
14	14					
15	15					
16	16					
17	17					
18	18					
19	19					
20	20					

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SEDIMENT CORING LOG

PROJECT/SURVEY <i>MARINA PARK</i>		DATE	PROJECT MANAGER <i>PAZ</i>	RECORDER <i>BWO</i>
STATION ID <i>MP-16</i>	NAV DATUM NAD83	LATITUDE <i>33 36.521</i>	LONGITUDE <i>117 55.327</i>	
WATER DEPTH (FT) <i>3.4 2.4</i>	TIDE (FT) <i>-1.5</i>	MLLW (FT) = WATER DEPTH - TIDE <i>5.1</i>	SAP DEPTH (FT) <i>14.5</i>	
TARGET CORE LENGTH (FT) (SAP DEPTH - MLL)	FINAL CORE LENGTH (FT) <i>8.5</i>	PENETRATION (FT) <i>8.5 - 9.0</i>	CORE LENGTH COLLECTED FOR ANALYSIS (FT) <i>8.5</i>	
CORE DIAMETER (IN) <i>1 1/2</i>	ATTEMPT <i>of</i>	TIME STARTED <i>2:40</i>	TIME FINISHED	

PEN. DEP.(FT)	RETR. DEP.(FT)	SEDIMENT TYPE	ODOR	COLOR (HUE VALUE/CHROMA)	SAMPLE ID BY DEPTH	MISC
1	1	↑	↑	<i>dark</i>	<i>MP16U</i>	
2	2	<i>Coarse sand</i>	↑	<i>grey</i>		
3	3	<i>Shell</i>				
4	4	<i>* Silt</i>	<i>none</i>			
5	5	↓				
6	6	<i>very coarse sand</i>			<i>MP16L</i>	
7	7	<i>coarse sand</i>			↓	
8	8	<i>shell</i>				
9	9	↓				
10	10					
11	11					
12	12					
13	13					
14	14					
15	15					
16	16					
17	17					
18	18					
19	19					
20	20					

NOTES
Area appears to be coarse sand over 2' silt layer underlain by very coarse sand.

MP-1



0 ft.
(+7 ft. MLLW)



8 ft.
(+1 ft. MLLW)

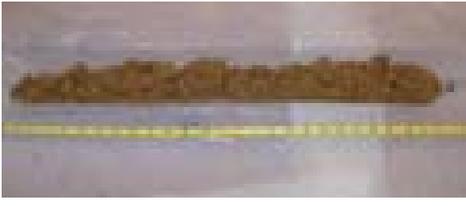
2 ft.
(+5 ft. MLLW)

4 ft.
(+3 ft. MLLW)

6 ft.
(+1 ft. MLLW)



8 ft.
(-1 ft. MLLW)



10 ft.
(-3 ft. MLLW)



12 ft.
(-6 ft. MLLW)



14 ft.
(-9 ft. MLLW)



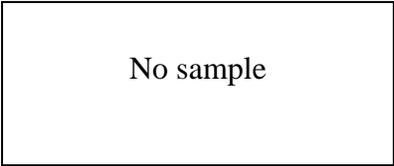
16 ft.
(-11 ft. MLLW)



20 ft.
(-15 ft. MLLW)

18 ft.
(-13 ft. MLLW)

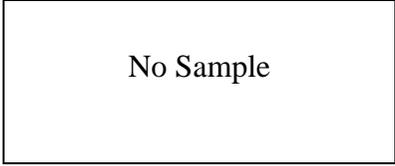
MP-2



0 ft.
(+5 ft. MLLW)



2 ft.
(+3 ft. MLLW)



4 ft.
(+1 ft. MLLW)

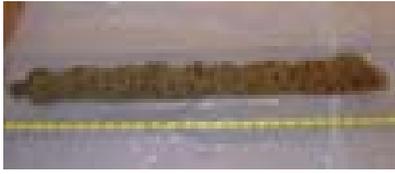
6 ft.
(-11 ft. MLLW)



6 ft.
(-1 ft. MLLW)

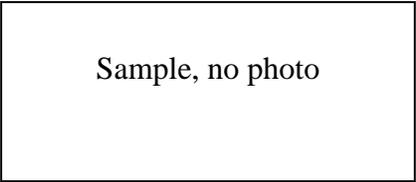


8 ft.
(-3 ft. MLLW)



10 ft.
(-5 ft. MLLW)

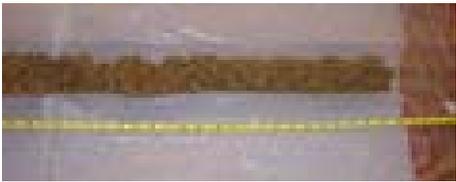
12 ft.
(-7 ft. MLLW)



12 ft.
(-7 ft. MLLW)



14 ft.
(-9 ft. MLLW)



16 ft.
(-11 ft. MLLW)



18 ft.
(-13 ft. MLLW)

20 ft.
(-15 ft. MLLW)

MP-3



0 ft.
(+5 ft. MLLW)



2 ft.
(+3 ft. MLLW)

Sample, no photo

4 ft.
(+1 ft. MLLW)

6 ft.
(-11 ft. MLLW)



6 ft.
(-1 ft. MLLW)



8 ft.
(-3 ft. MLLW)



10 ft.
(-5 ft. MLLW)

12 ft.
(-7 ft. MLLW)



12 ft.
(-7 ft. MLLW)



14 ft.
(-9 ft. MLLW)



16 ft.
(-11 ft. MLLW)



18 ft.
(-13 ft. MLLW)

20 ft.
(-15 ft. MLLW)

MP-4



0 ft.
(+5 ft. MLLW)



2 ft.
(+3 ft. MLLW)



4 ft.
(+1 ft. MLLW)



6 ft.
(-1 ft. MLLW)



8 ft.
(-3 ft. MLLW)



10 ft.
(-5 ft. MLLW)



12 ft.
(-7 ft. MLLW)



14 ft.
(-9 ft. MLLW)



16 ft.
(-11 ft. MLLW)



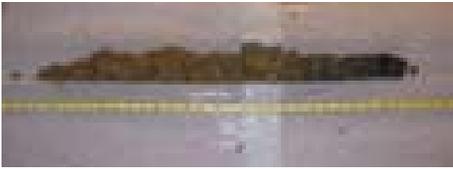
18 ft.
(-13 ft. MLLW)

20 ft.
(-15 ft. MLLW)

MP-5



0 ft.
(+5 ft. MLLW)



2 ft.
(+3 ft. MLLW)



4 ft.
(+1 ft. MLLW)



6 ft.
(-11 ft. MLLW)



6 ft.
(-1 ft. MLLW)



8 ft.
(-3 ft. MLLW)



10 ft.
(-5 ft. MLLW)

12 ft.
(-7 ft. MLLW)



12 ft.
(-7 ft. MLLW)



14 ft.
(-9 ft. MLLW)



16 ft.
(-11 ft. MLLW)



18 ft.
(-13 ft. MLLW)

20 ft.
(-15 ft. MLLW)

MP-6a



0 ft.
(+5 ft. MLLW)



2 ft.
(+3 ft. MLLW)



4 ft.
(+1 ft. MLLW)

6 ft.
(-1 ft. MLLW)



6 ft.
(-1 ft. MLLW)



8 ft.
(-3 ft. MLLW)



10 ft.
(-5 ft. MLLW)

12 ft.
(-7 ft. MLLW)



12 ft.
(-7 ft. MLLW)

14 ft.
(-9 ft. MLLW)

16 ft.
(-11 ft. MLLW)

18 ft.
(-13 ft. MLLW)

MP-6b



0 ft.
(+7 ft. MLLW)

2 ft.
(+5 ft. MLLW)

4 ft.
(+3 ft. MLLW)

6 ft.
(+1 ft. MLLW)

8 ft.
(-1 ft. MLLW)



8 ft.
(-1 ft. MLLW)



10 ft.
(-3 ft. MLLW)



12 ft.
(-5 ft. MLLW)



14 ft.
(-9 ft. MLLW)



16 ft.
(-11 ft. MLLW)



18 ft.
(-13 ft. MLLW)



20 ft.
(-15 ft. MLLW)

MP-7



0 ft.
(+4 ft. MLLW)



2 ft.
(+2 ft. MLLW)



4 ft.
(0 ft. MLLW)

6 ft.
(-2 ft. MLLW)



6 ft.
(-2 ft. MLLW)



8 ft.
(-4 ft. MLLW)



10 ft.
(-6 ft. MLLW)

12 ft.
(-8 ft. MLLW)



12 ft.
(-8 ft. MLLW)



14 ft.
(-10 ft. MLLW)



16 ft.
(-12 ft. MLLW)

18 ft.
(-14 ft. MLLW)

MP-8



0 ft.
(+5 ft. MLLW)



2 ft.
(+3 ft. MLLW)



4 ft.
(+1 ft. MLLW)

6 ft.
(-1 ft. MLLW)



6 ft.
(-1 ft. MLLW)



8 ft.
(-3 ft. MLLW)



10 ft.
(-5 ft. MLLW)

12 ft.
(-7 ft. MLLW)



12 ft.
(-9 ft. MLLW)



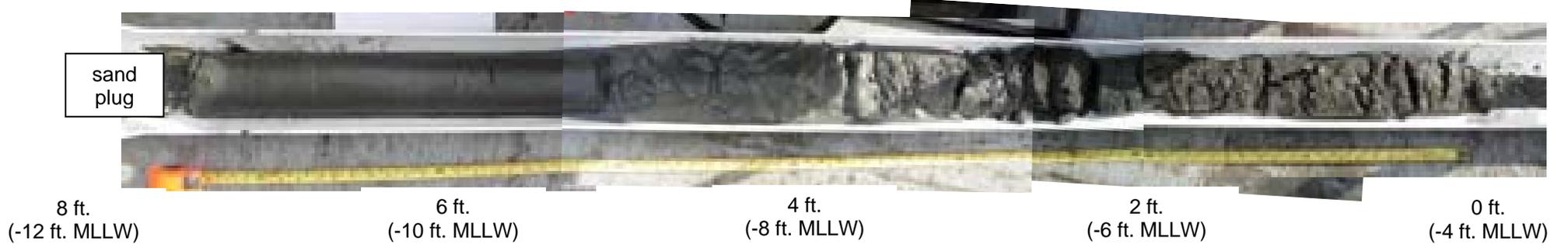
14 ft.
(-11 ft. MLLW)



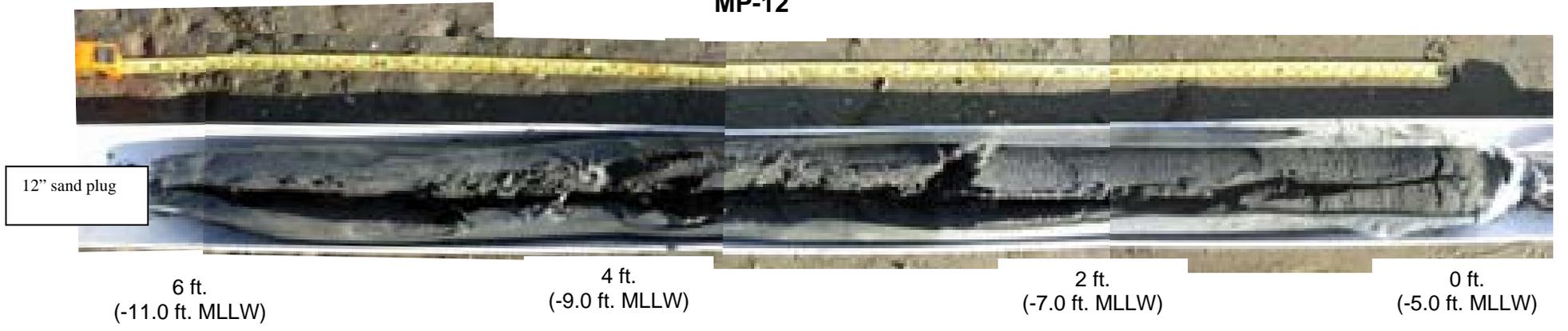
16 ft.
(-13 ft. MLLW)

18 ft.
(-15 ft. MLLW)

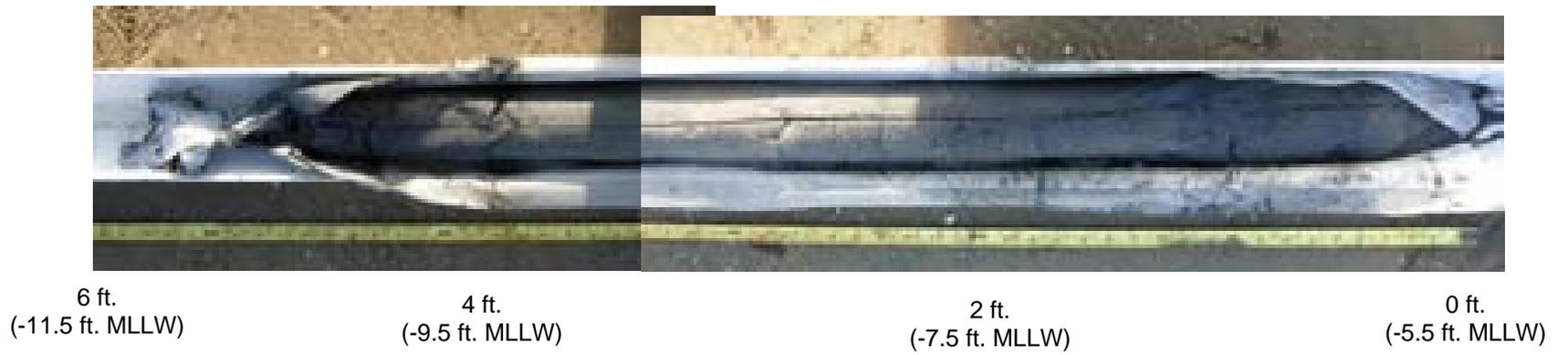
MP-10



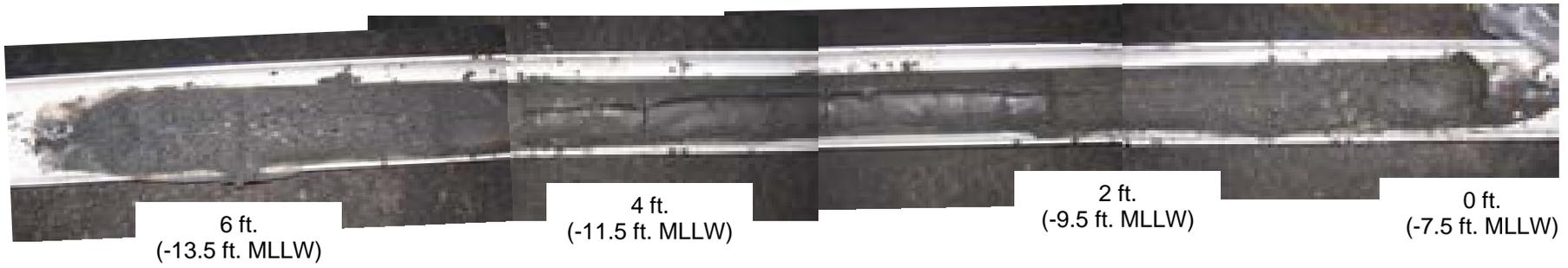
MP-12



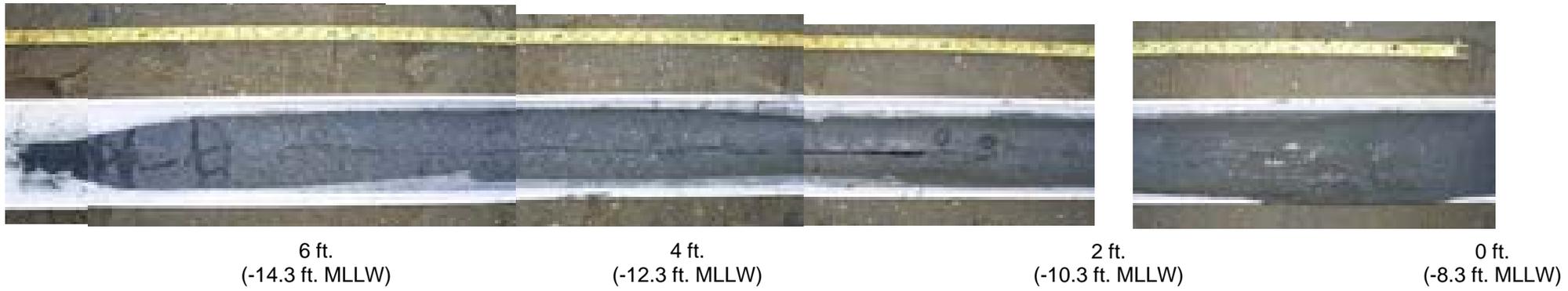
MP-14



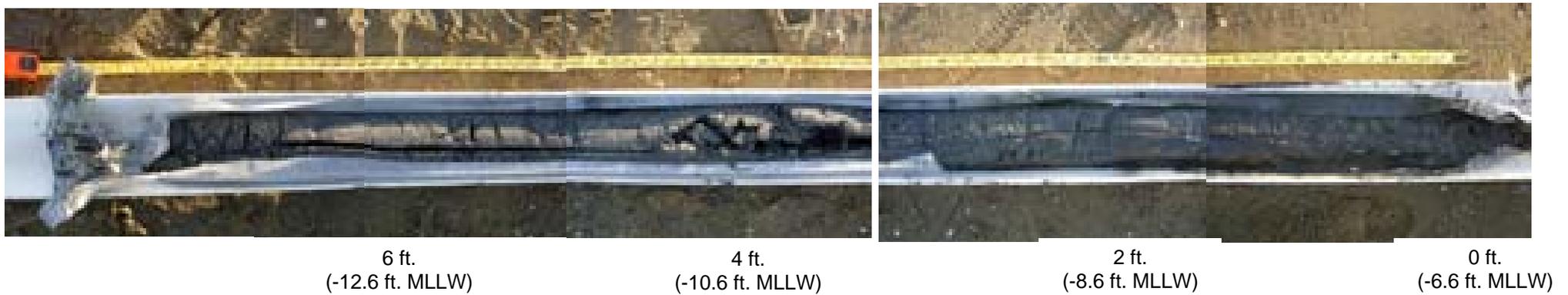
MP-11



MP-13



MP-15



MP-16



4 ft.
(-9 ft. MLLW)

2 ft.
(-7 ft. MLLW)

0 ft.
(-5 ft. MLLW)



8 ft.
(-13 ft. MLLW)

6 ft.
(-11 ft. MLLW)

4 ft.
(-9 ft. MLLW)

Appendix B
Chemistry Data

Newfields Northwest
Marina Park

Apparent Grain Size Distribution Summary
Percent Finer Than Indicated Size

Sample No.	Gravel			Very Coarse Sand	Coarse Sand	Medium Sand	Fine Sand	Very Fine Sand	Silt					Clay	
	PHI Size	-2	-1						5	6	7	8	9	10	
Sieve Size (microns)	3/8"	#4	#10 (2000)	#18 (1000)	#35 (500)	#60 (250)	#120 (125)	#230 (62)	31.00	15.60	7.80	3.90	2.00	1.00	
REF-05	100.0	100.0	99.9	99.7	99.4	98.9	98.1	94.3	73.3	57.2	42.7	33.4	28.2	17.7	
REF-05	100.0	100.0	99.7	99.5	99.1	98.5	97.7	93.9	80.7	58.9	42.8	33.5	28.4	17.8	
REF-05	100.0	100.0	100.0	99.6	99.3	98.7	97.9	93.8	76.8	58.4	43.0	33.6	28.4	17.9	
COMP A-U	100.0	99.6	97.8	91.6	76.0	48.4	16.2	4.2	2.9	2.4	2.1	1.6	1.4	0.9	
COMP A-L	100.0	98.3	90.4	69.8	31.1	4.7	1.1	0.7	NA	NA	NA	NA	NA	NA	
COMP B-U	100.0	99.9	97.7	90.5	71.9	40.5	14.6	4.2	2.5	2.1	1.8	1.5	1.3	1.0	
COMP B-L	100.0	99.0	94.8	81.5	56.2	25.6	8.2	1.1	NA	NA	NA	NA	NA	NA	

Notes to the Testing:

- Organic matter was not removed prior to testing, thus the reported values are the "apparent" grain size distribution. See narrative for discussion of the testing.

Newfields Northwest
Marina Park

Apparent Grain Size Distribution Summary
Percent Retained in Each Size Fraction

Sample No.	Gravel	Very Coarse Sand	Coarse Sand	Medium Sand	Fine Sand	Very Fine Sand	Coarse Silt	Medium Silt	Fine Silt	Very Fine Silt	Clay		Total Fines	
Phi Size	> -1	-1 to 0	0 to 1	1 to 2	2 to 3	3 to 4	4 to 5	5 to 6	6 to 7	7 to 8	8 to 9	9 to 10	< 10	<4
Sieve Size (microns)	> #10 (2000)	10 to 18 (2000-1000)	18-35 (1000-500)	35-60 (500-250)	60-120 (250-125)	120-230 (125-62)	62.5-31.0	31.0-15.6	15.6-7.8	7.8-3.9	3.9-2.0	2.0-1.0	<1.0	<230 (<62)
REF-05	0.1	0.2	0.3	0.5	0.8	3.8	21.0	16.1	14.6	9.3	5.1	10.6	17.7	94.3
REF-05	0.3	0.2	0.3	0.6	0.8	3.9	13.2	21.8	16.2	9.3	5.0	10.6	17.8	93.9
REF-05	0.0	0.4	0.3	0.6	0.8	4.1	17.0	18.4	15.4	9.4	5.3	10.4	17.9	93.8
COMP A-U	2.2	6.2	15.6	27.7	32.2	12.0	1.3	0.4	0.4	0.4	0.2	0.5	0.9	4.2
COMP A-L	9.6	20.6	38.7	26.4	3.7	0.4	NA	NA	NA	NA	NA	NA	NA	0.7
COMP B-U	2.3	7.3	18.6	31.3	26.0	10.4	1.7	0.3	0.3	0.3	0.2	0.3	1.0	4.2
COMP B-L	5.2	13.2	25.3	30.6	17.4	7.1	NA	NA	NA	NA	NA	NA	NA	1.1

Notes to the Testing:

1. Organic matter was not removed prior to testing, thus the reported values are the "apparent" grain size distribution. See narrative for discussion of the testing.

QA SUMMARY

Client:	Newfields Northwest	Project No.:	Marina Park
ARI Trip Sample ID:	OB99C	Batch No.:	OC80-1
Client Trip Sample ID:	REF-05	Page:	1 of 1

Sample ID	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10
REF-05	100.0	100.0	99.9	99.7	99.4	98.9	98.1	94.3	73.3	57.2	42.7	33.4	28.2	17.7
REF-05	100.0	100.0	99.7	99.5	99.1	98.5	97.7	93.9	80.7	68.9	42.8	33.5	28.4	17.8
REF-05	100.0	100.0	100.0	99.6	99.3	98.7	97.9	93.8	76.8	58.4	43.0	33.6	28.4	17.9
AVE	NA	100.00	99.86	99.61	99.29	98.72	97.91	94.00	76.93	58.16	42.80	33.48	28.34	17.81
STDEV	NA	0.00	0.18	0.13	0.15	0.18	0.18	0.29	3.70	0.87	0.17	0.14	0.10	0.12
%RSD	NA	0.00	0.18	0.13	0.15	0.18	0.18	0.31	4.81	1.49	0.39	0.41	0.36	0.70

The Triplicate Applies To The Following Samples

Client ID	Date Sampled	Date Extracted	Date Complete	QA Ratio (95-105)	Data Qualifiers	Pipette Portion (5.0-25.0g)
REF-05	12/2/2008	12/11/2008	12/24/2008	99.2		14.8
REF-05	12/2/2008	12/11/2008	12/24/2008	100.0		14.6
REF-05	12/2/2008	12/11/2008	12/24/2008	100.3		14.7
COMP A-U	12/5/2008	12/12/2008	12/24/2008	100.5		5.5
COMP A-L	12/5/2008	12/12/2008	12/24/2008	100.1	SS	0.9
COMP B-U	12/5/2008	12/12/2008	12/24/2008	100.8		5.4
COMP B-L	12/5/2008	12/12/2008	12/24/2008	99.1	SS	2.5

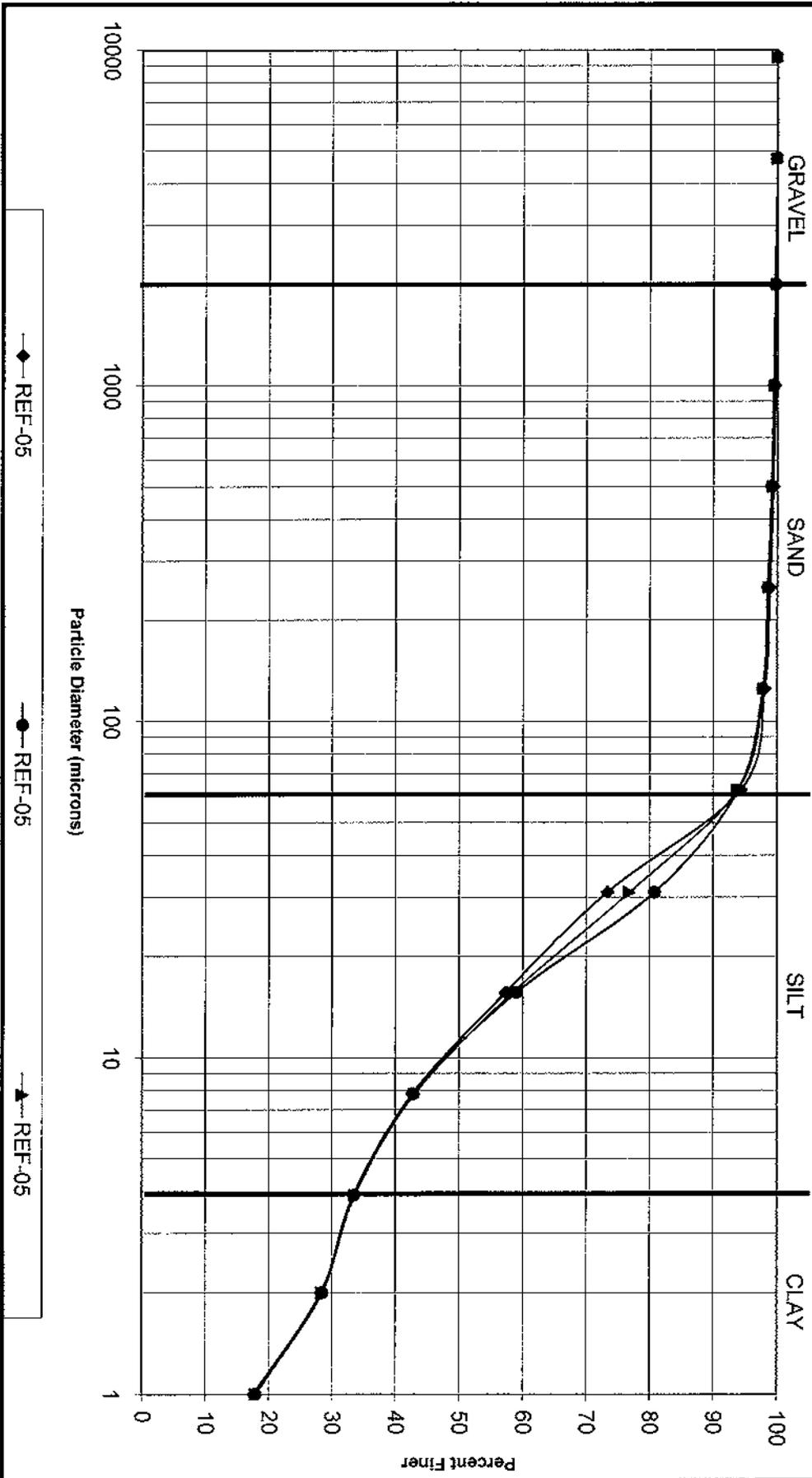
* ARI Internal QA limits = 95-105%

Notes to the Testing:

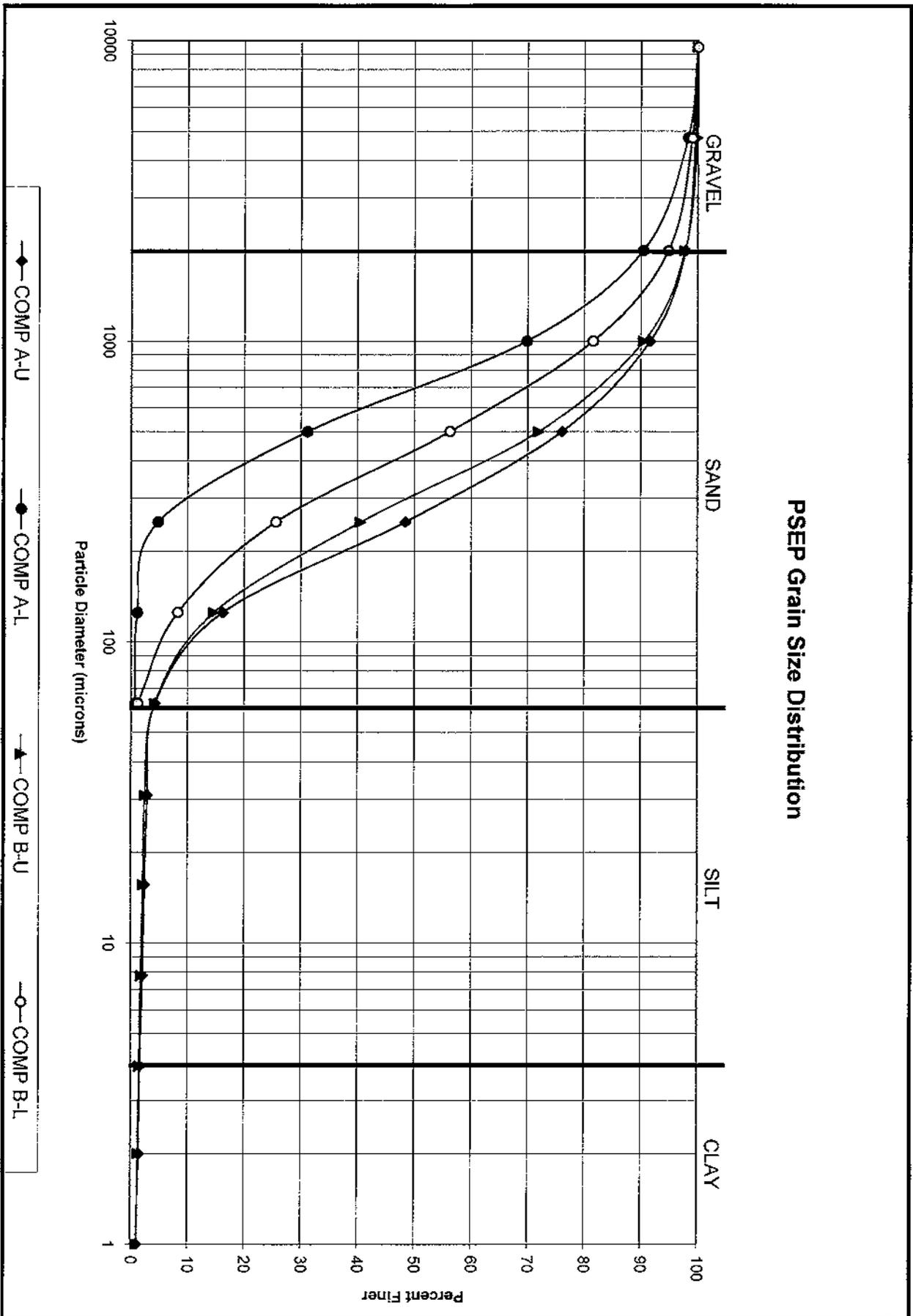
1. Organic matter was not removed prior to testing; thus the reported values are the "apparent" grain size distribution. See narrative for discussion of the testing.

PSEP Grain Size Distribution

Triplicate Sample Plot

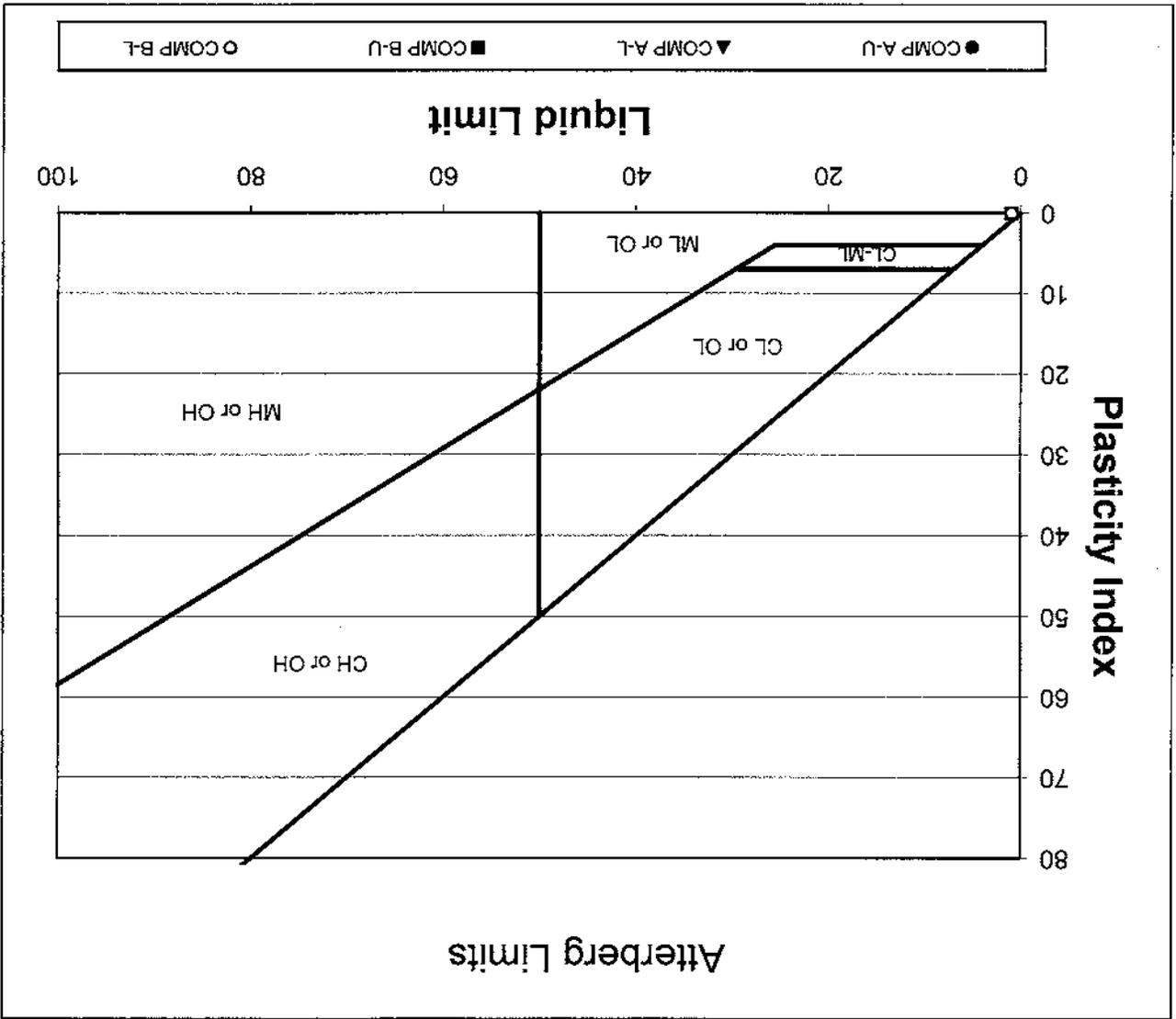


PSEP Grain Size Distribution



OC80

Sample Identification	Plasticity Index	Liquid Limit	Plastic Limit	USCS
COMP A-U	NA	NA	NA	Non-Plastic
COMP A-L	NA	NA	NA	Non-Plastic
COMP B-U	NA	NA	NA	Non-Plastic
COMP B-L	NA	NA	NA	Non-Plastic



Newfields Northwest
Marina Park

SAMPLE RESULTS-CONVENTIONALS
OC80-Newfields Northwest



Matrix: Sediment
Data Release Authorized: *MB*
Reported: 01/02/09

Project: MARINA PARK
Event: NA
Date Sampled: 11/26/08
Date Received: 12/05/08

Client ID: COMP A-U
ARI ID: 08-32709 OC80A

Analyte	Date	Method	Units	RL	Sample
Total Solids	12/08/08 120808#3	EPA 160.3	Percent	0.01	84.60
Preserved Total Solids	12/09/08 120908#2	EPA 160.3	Percent	0.01	82.80
N-Ammonia	12/11/08 121108#1	EPA 350.1M	mg-N/kg	0.12	1.20
Sulfide	12/08/08 120808#1	EPA 376.2	mg/kg	1.18	7.56
Total Organic Carbon	12/11/08 121108#1	Plumb, 1981	Percent	0.020	0.151
HEM Oil & Grease	12/30/08 123008#1	9071 B	mg/kg	230	< 230 U
HEM-ST NP Oil & Grease	12/30/08	9071 B	mg/kg	230	< 230 U
HEM Polar Oil & Grease	12/30/08	9071 B	mg/kg	230	< 230 U

RL Analytical reporting limit
U Undetected at reported detection limit

Ammonia determined on 2N KCl extracts.

SAMPLE RESULTS-CONVENTIONALS
 OC80-Newfields Northwest



Matrix: Sediment
 Data Release Authorized *MB*
 Reported: 01/02/09

Project: MARINA PARK
 Event: NA
 Date Sampled: 11/26/08
 Date Received: 12/05/08

Client ID: COMP A-L
 ARI ID: 08-32710 OC80B

Analyte	Date	Method	Units	RL	Sample
Total Solids	12/08/08 120808#3	EPA 160.3	Percent	0.01	90.30
Preserved Total Solids	12/09/08 120908#2	EPA 160.3	Percent	0.01	82.00
N-Ammonia	12/11/08 121108#1	EPA 350.1M	mg-N/kg	0.11	< 0.11 U
Sulfide	12/08/08 120808#1	EPA 376.2	mg/kg	1.20	< 1.20 U
Total Organic Carbon	12/11/08 121108#1	Plumb, 1981	Percent	0.020	0.076
HEM Oil & Grease	12/30/08 123008#1	9071 B	mg/kg	215	< 215 U
HEM-ST NP Oil & Grease	12/30/08	9071 B	mg/kg	215	< 215 U
HEM Polar Oil & Grease	12/30/08	9071 B	mg/kg	215	< 215 U

RL Analytical reporting limit
 U Undetected at reported detection limit

Ammonia determined on 2N KCl extracts.

SAMPLE RESULTS-CONVENTIONALS
OC80-Newfields Northwest



Matrix: Sediment
Data Release Authorized
Reported: 01/02/09

Handwritten initials, possibly 'MB', in black ink.

Project: MARINA PARK
Event: NA
Date Sampled: 11/26/08
Date Received: 12/05/08

Client ID: COMP B-U
ARI ID: 08-32711 OC80C

Analyte	Date	Method	Units	RL	Sample
Total Solids	12/08/08 120808#3	EPA 160.3	Percent	0.01	89.30
Preserved Total Solids	12/09/08 120908#2	EPA 160.3	Percent	0.01	83.60
N-Ammonia	12/11/08 121108#1	EPA 350.1M	mg-N/kg	0.10	0.17
Sulfide	12/08/08 120808#1	EPA 376.2	mg/kg	1.16	< 1.16 U
Total Organic Carbon	12/11/08 121108#1	Plumb, 1981	Percent	0.020	0.055
HEM Oil & Grease	12/30/08 123008#1	9071 B	mg/kg	218	< 218 U
HEM-ST NP Oil & Grease	12/30/08	9071 B	mg/kg	218	< 218 U
HEM Polar Oil & Grease	12/30/08	9071 B	mg/kg	218	< 218 U

RL Analytical reporting limit
U Undetected at reported detection limit

Ammonia determined on 2N KCl extracts.

SAMPLE RESULTS--CONVENTIONALS
OC80-Newfields Northwest



Matrix: Sediment
Data Release Authorized
Reported: 01/02/09

Project: MARINA PARK
Event: NA
Date Sampled: 11/26/08
Date Received: 12/05/08

Client ID: COMP B-L
ARI ID: 08-32712 OC80D

Analyte	Date	Method	Units	RL	Sample
Total Solids	12/08/08 120808#3	EPA 160.3	Percent	0.01	86.60
Preserved Total Solids	12/09/08 120908#2	EPA 160.3	Percent	0.01	85.70
N-Ammonia	12/11/08 121108#1	EPA 350.1M	mg-N/kg	0.10	< 0.10 U
Sulfide	12/08/08 120808#1	EPA 376.2	mg/kg	1.15	4.25
Total Organic Carbon	12/11/08 121108#1	Plumb, 1981	Percent	0.020	0.071
HEM Oil & Grease	12/30/08 123008#1	9071 B	mg/kg	226	< 226 U
HEM-ST NP Oil & Grease	12/30/08	9071 B	mg/kg	226	< 226 U
HEM Polar Oil & Grease	12/30/08	9071 B	mg/kg	226	< 226 U

RL Analytical reporting limit
U Undetected at reported detection limit

Ammonia determined on 2N KCl extracts.

METHOD BLANK RESULTS-CONVENTIONALS
OC80-Newfields Northwest



Matrix: Sediment
Data Release Authorized
Reported: 01/02/09

A handwritten signature in black ink, appearing to be 'MB', is written over the text 'Data Release Authorized'.

Project: MARINA PARK
Event: NA
Date Sampled: NA
Date Received: NA

Analyte	Date	Units	Blank
Total Solids	12/08/08	Percent	< 0.01 U
Preserved Total Solids	12/09/08	Percent	< 0.01 U
N-Ammonia	12/11/08 12/11/08	mg-N/kg	< 0.10 U < 0.10 U
Sulfide	12/08/08	mg/kg	< 1.00 U
Total Organic Carbon	12/11/08	Percent	< 0.020 U
HEM Oil & Grease	12/30/08	mg/kg	260

LAB CONTROL RESULTS-CONVENTIONALS
OC80-Newfields Northwest



Matrix: Sediment
Data Release Authorized *MR*
Reported: 01/02/09

Project: MARINA PARK
Event: NA
Date Sampled: NA
Date Received: NA

Analyte	Date	Units	LCS	Spike Added	Recovery
Sulfide	12/08/08	mg/kg	119	114	104.8%
Total Organic Carbon	12/11/08	Percent	0.489	0.500	97.8%

STANDARD REFERENCE RESULTS-CONVENTIONALS
OC80-Newfields Northwest



Matrix: Sediment
Data Release Authorized *MB*
Reported: 01/02/09

Project: MARINA PARK
Event: NA
Date Sampled: NA
Date Received: NA

Analyte/SRM ID	Date	Units	SRM	True Value	Recovery
N-Ammonia	12/11/08	mg-N/kg	94.6	100	94.6%
SPEX 28-24AS	12/11/08		102	100	102.0%
Total Organic Carbon	12/11/08	Percent	3.04	3.35	90.7%
NIST #8704					
HEM Oil & Grease	12/30/08	mg/kg	8,180	8,000	102.2%
Env. Exp. #104629					

REPLICATE RESULTS-CONVENTIONALS
 OC80-Newfields Northwest



Matrix: Sediment
 Data Release Authorized *MS*
 Reported: 01/02/09

Project: MARINA PARK
 Event: NA
 Date Sampled: 11/26/08
 Date Received: 12/05/08

Analyte	Date	Units	Sample	Replicate(s)	RPD/RSD
ARI ID: OC80A	Client ID: COMP A-U				
Total Solids	12/08/08	Percent	84.60	83.90 83.70	0.6%
Preserved Total Solids	12/09/08	Percent	82.80	83.10 83.30	0.3%
N-Ammonia	12/11/08	mg-N/kg	1.20	1.06 1.27	9.1%
Sulfide	12/08/08	mg/kg	7.56	3.00	86.4%
Total Organic Carbon	12/11/08	Percent	0.151	0.127 0.110	15.9%
HEM Oil & Grease	12/30/08	mg/kg	< 230	< 231	NA

MS/MSD RESULTS-CONVENTIONALS
OC80-Newfields Northwest



Matrix: Sediment
Data Release Authorized: 
Reported: 01/02/09

Project: MARINA PARK
Event: NA
Date Sampled: 11/26/08
Date Received: 12/05/08

Analyte	Date	Units	Sample	Spike	Spike Added	Recovery
ARI ID: OC80A Client ID: COMP A-U						
N-Ammonia	12/11/08	mg-N/kg	1.20	110	115	94.8%
Sulfide	12/08/08	mg/kg	7.56	139	136	96.6%
Total Organic Carbon	12/11/08	Percent	0.151	0.710	0.578	96.7%
HEM Oil & Grease	12/30/08	mg/kg	< 230	1,970	2,310	85.3%

INORGANICS ANALYSIS DATA SHEET

TOTAL METALS

Page 1 of 1

Sample ID: COMP A-U
SAMPLE

Lab Sample ID: OC80A

LIMS ID: 08-32709

Matrix: Sediment

Data Release Authorized: 

Reported: 12/17/08

QC Report No: OC80-Newfields Northwest

Project: MARINA PARK

Date Sampled: 11/26/08

Date Received: 12/05/08

Percent Total Solids: 85.0%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry	Q
3050B	12/10/08	6010B	12/15/08	7440-38-2	Arsenic	6	6	U
3050B	12/10/08	6010B	12/15/08	7440-43-9	Cadmium	0.2	0.2	U
3050B	12/10/08	6010B	12/15/08	7440-47-3	Chromium	0.6	4.8	
3050B	12/10/08	6010B	12/15/08	7440-50-8	Copper	0.2	2.8	
3050B	12/10/08	6010B	12/15/08	7439-92-1	Lead	2	2	U
CLP	12/10/08	7471A	12/15/08	7439-97-6	Mercury	0.05	0.05	U
3050B	12/10/08	6010B	12/15/08	7440-02-0	Nickel	1	3	
3050B	12/10/08	7740	12/15/08	7782-49-2	Selenium	0.2	0.2	U
3050B	12/10/08	6010B	12/15/08	7440-22-4	Silver	0.3	0.3	U
3050B	12/10/08	6010B	12/15/08	7440-66-6	Zinc	1	10	

U-Analyte undetected at given RL

RL-Reporting Limit

INORGANICS ANALYSIS DATA SHEET

TOTAL METALS

Page 1 of 1

Sample ID: COMP A-U

DUPLICATE

Lab Sample ID: OC80A

LIMS ID: 08-32709

Matrix: Sediment

Data Release Authorized 

Reported: 12/17/08

QC Report No: OC80-Newfields Northwest

Project: MARINA PARK

Date Sampled: 11/26/08

Date Received: 12/05/08

MATRIX DUPLICATE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample	Duplicate	RPD	Control Limit	Q
Arsenic	6010B	6 U	6 U	0.0%	+/- 6	L
Cadmium	6010B	0.2 U	0.2 U	0.0%	+/- 0.2	L
Chromium	6010B	4.8	4.9	2.1%	+/- 20%	
Copper	6010B	2.8	2.5	11.3%	+/- 20%	
Lead	6010B	2 U	2 U	0.0%	+/- 2	L
Mercury	7471A	0.05 U	0.05 U	0.0%	+/- 0.05	L
Nickel	6010B	3	2	40.0%	+/- 1	L
Selenium	7740	0.2 U	0.2 U	0.0%	+/- 0.2	L
Silver	6010B	0.3 U	0.3 U	0.0%	+/- 0.3	L
Zinc	6010B	10	10	0.0%	+/- 20%	

Reported in mg/kg-dry

*-Control Limit Not Met

L-RPD Invalid, Limit = Detection Limit

INORGANICS ANALYSIS DATA SHEET

TOTAL METALS

Page 1 of 1

Sample ID: COMP A-U

MATRIX SPIKE

Lab Sample ID: OC80A

LIMS ID: 08-32709

Matrix: Sediment

Data Release Authorized: *dh*

Reported: 12/17/08

QC Report No: OC80-Newfields Northwest

Project: MARINA PARK

Date Sampled: 11/26/08

Date Received: 12/05/08

MATRIX SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample	Spike	Spike Added	% Recovery	Q
Arsenic	6010B	6 U	240	230	104%	
Cadmium	6010B	0.2 U	56.7	57.6	98.4%	
Chromium	6010B	4.8	59.4	57.6	94.8%	
Copper	6010B	2.8	63.4	57.6	105%	
Lead	6010B	2 U	229	230	99.6%	
Mercury	7471A	0.05 U	0.55	0.496	111%	
Nickel	6010B	3	58	57.6	95.5%	
Selenium	7740	0.2 U	12.5	11.8	106%	
Silver	6010B	0.3 U	61.5	57.6	107%	
Zinc	6010B	10	67	57.6	99.0%	

Reported in mg/kg-dry

N-Control Limit Not Met

H-% Recovery Not Applicable, Sample Concentration Too High

NA-Not Applicable, Analyte Not Spiked

Percent Recovery Limits: 75-125%



INORGANICS ANALYSIS DATA SHEET
 TOTAL METALS
 Page 1 of 1

Sample ID: COMP A-L
 SAMPLE

Lab Sample ID: OC80B
 LIMS ID: 08-32710
 Matrix: Sediment
 Data Release Authorized: *JH*
 Reported: 12/17/08

QC Report No: OC80-Newfields Northwest
 Project: MARINA PARK
 Date Sampled: 11/26/08
 Date Received: 12/05/08

Percent Total Solids: 88.6%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry	Q
3050B	12/10/08	6010B	12/15/08	7440-38-2	Arsenic	6	6	U
3050B	12/10/08	6010B	12/15/08	7440-43-9	Cadmium	0.2	0.2	U
3050B	12/10/08	6010B	12/15/08	7440-47-3	Chromium	0.6	2.2	
3050B	12/10/08	6010B	12/15/08	7440-50-8	Copper	0.2	1.0	
3050B	12/10/08	6010B	12/15/08	7439-92-1	Lead	2	2	U
CLP	12/10/08	7471A	12/15/08	7439-97-6	Mercury	0.06	0.06	U
3050B	12/10/08	6010B	12/15/08	7440-02-0	Nickel	1	1	U
3050B	12/10/08	7740	12/15/08	7782-49-2	Selenium	0.2	0.2	U
3050B	12/10/08	6010B	12/15/08	7440-22-4	Silver	0.3	0.3	U
3050B	12/10/08	6010B	12/15/08	7440-66-6	Zinc	1	6	

U-Analyte undetected at given RL
 RL-Reporting Limit

INORGANICS ANALYSIS DATA SHEET

TOTAL METALS

Page 1 of 1

Sample ID: COMP B-U
SAMPLE

Lab Sample ID: OC80C

LIMS ID: 08-32711

Matrix: Sediment

Data Release Authorized: 

Reported: 12/17/08

QC Report No: OC80-Newfields Northwest

Project: MARINA PARK

Date Sampled: 11/26/08

Date Received: 12/05/08

Percent Total Solids: 86.8%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry	Q
3050B	12/10/08	6010B	12/15/08	7440-38-2	Arsenic	5	6	
3050B	12/10/08	6010B	12/15/08	7440-43-9	Cadmium	0.2	0.2	U
3050B	12/10/08	6010B	12/15/08	7440-47-3	Chromium	0.5	3.8	
3050B	12/10/08	6010B	12/15/08	7440-50-8	Copper	0.2	3.7	
3050B	12/10/08	6010B	12/15/08	7439-92-1	Lead	2	5	
CLP	12/10/08	7471A	12/15/08	7439-97-6	Mercury	0.05	0.05	
3050B	12/10/08	6010B	12/15/08	7440-02-0	Nickel	1	2	
3050B	12/10/08	7740	12/15/08	7782-49-2	Selenium	0.2	0.2	U
3050B	12/10/08	6010B	12/15/08	7440-22-4	Silver	0.3	0.8	
3050B	12/10/08	6010B	12/15/08	7440-66-6	Zinc	1	11	

U-Analyte undetected at given RL

RL-Reporting Limit

INORGANICS ANALYSIS DATA SHEET

TOTAL METALS

Page 1 of 1

Sample ID: COMP B-L
SAMPLE

Lab Sample ID: OC80D

LIMS ID: 08-32712

Matrix: Sediment

Data Release Authorized: 

Reported: 12/17/08

QC Report No: OC80-Newfields Northwest

Project: MARINA PARK

Date Sampled: 11/26/08

Date Received: 12/05/08

Percent Total Solids: 84.4%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry	Q
3050B	12/10/08	6010B	12/15/08	7440-38-2	Arsenic	6	6	U
3050B	12/10/08	6010B	12/15/08	7440-43-9	Cadmium	0.2	0.2	U
3050B	12/10/08	6010B	12/15/08	7440-47-3	Chromium	0.6	3.2	
3050B	12/10/08	6010B	12/15/08	7440-50-8	Copper	0.2	2.4	
3050B	12/10/08	6010B	12/15/08	7439-92-1	Lead	2	2	U
CLP	12/10/08	7471A	12/15/08	7439-97-6	Mercury	0.05	0.05	U
3050B	12/10/08	6010B	12/15/08	7440-02-0	Nickel	1	2	
3050B	12/10/08	7740	12/15/08	7782-49-2	Selenium	0.2	0.2	U
3050B	12/10/08	6010B	12/15/08	7440-22-4	Silver	0.3	0.3	U
3050B	12/10/08	6010B	12/15/08	7440-66-6	Zinc	1	6	

U-Analyte undetected at given RL

RL-Reporting Limit



INORGANICS ANALYSIS DATA SHEET

TOTAL METALS

Sample ID: METHOD BLANK

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Lab Sample ID: OC80MB

QC Report No: OC80-Newfields Northwest

LIMS ID: 08-32710

Project: MARINA PARK

Matrix: Sediment

Data Release Authorized:

Date Sampled: NA

Reported: 12/17/08

Date Received: NA

Percent Total Solids: NA

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry	Q
3050B	12/10/08	6010B	12/15/08	7440-38-2	Arsenic	5	5	U
3050B	12/10/08	6010B	12/15/08	7440-43-9	Cadmium	0.2	0.2	U
3050B	12/10/08	6010B	12/15/08	7440-47-3	Chromium	0.5	0.5	U
3050B	12/10/08	6010B	12/15/08	7440-50-8	Copper	0.2	0.2	U
3050B	12/10/08	6010B	12/15/08	7439-92-1	Lead	2	2	U
CLP	12/10/08	7471A	12/15/08	7439-97-6	Mercury	0.05	0.05	U
3050B	12/10/08	6010B	12/15/08	7440-02-0	Nickel	1	1	U
3050B	12/10/08	7740	12/15/08	7782-49-2	Selenium	0.2	0.2	U
3050B	12/10/08	6010B	12/15/08	7440-22-4	Silver	0.3	0.3	U
3050B	12/10/08	6010B	12/15/08	7440-66-6	Zinc	1	1	U

U-Analyte undetected at given RL
RL-Reporting Limit

INORGANICS ANALYSIS DATA SHEET

TOTAL METALS

Page 1 of 1

Sample ID: LAB CONTROL

Lab Sample ID: OC80LCS

LIMS ID: 08-32710

Matrix: Sediment

Data Release Authorized: 

Reported: 12/17/08

QC Report No: OC80-Newfields Northwest

Project: MARINA PARK

Date Sampled: NA

Date Received: NA

BLANK SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Spike Found	Spike Added	% Recovery	Q
Arsenic	6010B	198	200	99.0%	
Cadmium	6010B	49.0	50.0	98.0%	
Chromium	6010B	46.9	50.0	93.8%	
Copper	6010B	50.1	50.0	100%	
Lead	6010B	200	200	100%	
Mercury	7471A	1.14	1.00	114%	
Nickel	6010B	46	50	92.0%	
Selenium	7740	9	10	90.0%	
Silver	6010B	54.1	50.0	108%	
Zinc	6010B	47	50	94.0%	

Reported in mg/kg-dry

N-Control limit not met

NA-Not Applicable, Analyte Not Spiked

Control Limits: 80-120%

INORGANICS ANALYSIS DATA SHEET

TOTAL METALS

Page 1 of 1

Sample ID: COMP A-U
SAMPLE

Lab Sample ID: OF16A

LIMS ID: 08-34349

Matrix: Sediment

Data Release Authorized: 

Reported: 12/29/08

QC Report No: OF16-Newfields Northwest

Project: MARINA PARK

Date Sampled: 11/26/08

Date Received: 12/05/08

Percent Total Solids: 83.3%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry	Q
3050B	12/23/08	200.8	12/26/08	7440-38-2	Arsenic	0.2	2.0	

U-Analyte undetected at given RL

RL-Reporting Limit

INORGANICS ANALYSIS DATA SHEET

TOTAL METALS

Page 1 of 1

Sample ID: COMP A-L
SAMPLE

Lab Sample ID: OF16B

LIMS ID: 08-34350

Matrix: Sediment

Data Release Authorized: 

Reported: 12/29/08

QC Report No: OF16-Newfields Northwest

Project: MARINA PARK

Date Sampled: 11/26/08

Date Received: 12/05/08

Percent Total Solids: 86.3%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry	Q
3050B	12/23/08	200.8	12/26/08	7440-38-2	Arsenic	0.2	2.1	

U-Analyte undetected at given RL

RL-Reporting Limit

INORGANICS ANALYSIS DATA SHEET

TOTAL METALS

Page 1 of 1

Sample ID: COMP B-U
SAMPLE

Lab Sample ID: OF16C

LIMS ID: 08-34351

Matrix: Sediment

Data Release Authorized: 

Reported: 12/29/08

QC Report No: OF16-Newfields Northwest

Project: MARINA PARK

Date Sampled: 11/26/08

Date Received: 12/05/08

Percent Total Solids: 87.3%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry	Q
3050B	12/23/08	200.8	12/26/08	7440-38-2	Arsenic	0.2	2.2	

U-Analyte undetected at given RL

RL-Reporting Limit

INORGANICS ANALYSIS DATA SHEET

TOTAL METALS

Page 1 of 1

Sample ID: COMP B-L
SAMPLE

Lab Sample ID: OF16D

LIMS ID: 08-34352

Matrix: Sediment

Data Release Authorized: 

Reported: 12/29/08

QC Report No: OF16-Newfields Northwest

Project: MARINA PARK

Date Sampled: 11/26/08

Date Received: 12/05/08

Percent Total Solids: 85.2%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry	Q
3050B	12/23/08	200.8	12/26/08	7440-38-2	Arsenic	0.2	1.9	

U-Analyte undetected at given RL

RL-Reporting Limit

INORGANICS ANALYSIS DATA SHEET

TOTAL METALS

Sample ID: METHOD BLANK

Page 1 of 1

Lab Sample ID: OF16MB

QC Report No: OF16-Newfields Northwest

LIMS ID: 08-34349

Project: MARINA PARK

Matrix: Sediment

Data Release Authorized: 

Date Sampled: NA

Reported: 12/29/08

Date Received: NA

Percent Total Solids: NA

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry	Q
3050B	12/23/08	200.8	12/26/08	7440-38-2	Arsenic	0.2	0.2	U

U-Analyte undetected at given RL

RL-Reporting Limit

INORGANICS ANALYSIS DATA SHEET

TOTAL METALS

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Sample ID: LAB CONTROL

Lab Sample ID: OF16LCS

LIMS ID: 08-34349

Matrix: Sediment

Data Release Authorized: 

Reported: 12/29/08

QC Report No: OF16-Newfields Northwest

Project: MARINA PARK

Date Sampled: NA

Date Received: NA

BLANK SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Spike Found	Spike Added	% Recovery	Q
Arsenic	200.8	26.3	25.0	105%	

Reported in mg/kg-dry

N-Control limit not met

NA-Not Applicable, Analyte Not Spiked

Control Limits: 80-120%

TBT SURROGATE RECOVERY SUMMARY

Matrix: Sediment

QC Report No: OC80-Newfields Northwest
Project: MARINA PARK
Event: NA

Client ID	TPRT	TPNT	TOT OUT
COMP A-U	103%	226%*	1
COMP A-L	84.1%	92.8%	0
COMP B-U	102%	106%	0
MB-120908	83.9%	170%*	1
LCS-120908	94.6%	268%*	1
COMP B-L	101%	185%*	1
COMP B-L MS	96.0%	102%	0
COMP B-L MSD	97.3%	106%	0

	LCS/MB LIMITS	QC LIMITS
(TPRT) = Tripropyl Tin Chloride	(30-160)	(30-160)
(TPNT) = Tripentyl Tin Chloride	(30-160)	(30-160)

Prep Method: SW3546
Analytical Method: TBT (Hexyl) Krone 1988
Log Number Range: 08-32709 to 08-32712

ORGANICS ANALYSIS DATA SHEET
Tributyl Tins by Krone 1988 SIM GC/MS
Page 1 of 1

Sample ID: COMP A-U
SAMPLE

Lab Sample ID: OC80A
LIMS ID: 08-32709
Matrix: Sediment
Data Release Authorized:
Reported: 12/15/08

QC Report No: OC80-Newfields Northwest
Project: MARINA PARK
Event: NA
Date Sampled: 11/26/08
Date Received: 12/05/08

Date Extracted: 12/09/08
Date Analyzed: 12/11/08 17:37
Instrument/Analyst: NT2/VTS
Silica Gel Cleanup: No

Sample Amount: 5.55 g-dry-wt
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00
Alumina Cleanup: Yes
Moisture: 15.1%

CAS Number	Analyte	RL	Result	Q
TBT_ION	Tributyltin Ion	3.5	< 3.5	U
DBT_ION	Dibutyltin Ion	5.2	16	
BT_ION	Butyltin Ion	3.7	5.5	

Reported in $\mu\text{g}/\text{kg}$ (ppb)

TBT Surrogate Recovery

Tripropyl Tin Chloride	103%
Tripenyl Tin Chloride	226%

ORGANICS ANALYSIS DATA SHEET
Tributyl Tins by Krone 1988 SIM GC/MS
Page 1 of 1

Sample ID: COMP A-L
SAMPLE

Lab Sample ID: OC80B
LIMS ID: 08-32710
Matrix: Sediment
Data Release Authorized: 
Reported: 12/15/08

QC Report No: OC80-Newfields Northwest
Project: MARINA PARK
Event: NA
Date Sampled: 11/26/08
Date Received: 12/05/08

Date Extracted: 12/09/08
Date Analyzed: 12/11/08 17:56
Instrument/Analyst: NT2/VTS
Silica Gel Cleanup: No

Sample Amount: 5.61 g-dry-wt
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00
Alumina Cleanup: Yes
Moisture: 12.8%

CAS Number	Analyte	RL	Result	Q
TBT_ION	Tributyltin Ion	3.4	< 3.4	U
DBT_ION	Dibutyltin Ion	5.2	15	
BT_ION	Butyltin Ion	3.6	4.8	

Reported in $\mu\text{g}/\text{kg}$ (ppb)

TBT Surrogate Recovery

Tripropyl Tin Chloride	84.1%
Triphenyl Tin Chloride	92.8%

ORGANICS ANALYSIS DATA SHEET
Tributyl Tins by Krone 1988 SIM GC/MS
Page 1 of 1

Sample ID: COMP B-U
SAMPLE

Lab Sample ID: OC80C
LIMS ID: 08-32711
Matrix: Sediment
Data Release Authorized:
Reported: 12/15/08

QC Report No: OC80-Newfields Northwest
Project: MARINA PARK
Event: NA
Date Sampled: 11/26/08
Date Received: 12/05/08

Date Extracted: 12/09/08
Date Analyzed: 12/11/08 18:16
Instrument/Analyst: NT2/VTS
Silica Gel Cleanup: No

Sample Amount: 5.40 g-dry-wt
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00
Alumina Cleanup: Yes
Moisture: 13.7%

CAS Number	Analyte	RL	Result	Q
TBT_ION	Tributyltin Ion	3.6	< 3.6	U
DBT_ION	Dibutyltin Ion	5.4	13	
BT_ION	Butyltin Ion	3.8	< 3.8	U

Reported in $\mu\text{g}/\text{kg}$ (ppb)

TBT Surrogate Recovery

Tripropyl Tin Chloride	102%
Tripropyl Tin Chloride	106%



ORGANICS ANALYSIS DATA SHEET
 Tributyl Tins by Krone 1988 SIM GC/MS
 Page 1 of 1

Sample ID: COMP B-L
 SAMPLE

Lab Sample ID: OC80D
 LIMS ID: 08-32712
 Matrix: Sediment
 Data Release Authorized: *[Signature]*
 Reported: 12/15/08

QC Report No: OC80-Newfields Northwest
 Project: MARINA PARK
 Event: NA
 Date Sampled: 11/26/08
 Date Received: 12/05/08

Date Extracted: 12/09/08
 Date Analyzed: 12/11/08 18:35
 Instrument/Analyst: NT2/VTS
 Silica Gel Cleanup: No

Sample Amount: 5.47 g-dry-wt
 Final Extract Volume: 0.50 mL
 Dilution Factor: 1.00
 Alumina Cleanup: Yes
 Moisture: 15.7%

CAS Number	Analyte	RL	Result	Q
TBT_ION	Tributyltin Ion	3.5	< 3.5	U
DBT_ION	Dibutyltin Ion	5.3	19	
BT_ION	Butyltin Ion	3.7	6.1	

Reported in $\mu\text{g}/\text{kg}$ (ppb)

TBT Surrogate Recovery

Tripropyl Tin Chloride	101%
Tripenyl Tin Chloride	185%

ORGANICS ANALYSIS DATA SHEET
Tributyl Tins by Krone 1988 SIM GC/MS
Page 1 of 1

Sample ID: COMP B-L
MATRIX SPIKE

Lab Sample ID: OC80D
LIMS ID: 08-32712
Matrix: Sediment
Data Release Authorized: 
Reported: 12/15/08

QC Report No: OC80-Newfields Northwest
Project: MARINA PARK
Date Sampled: 11/26/08
Date Received: 12/05/08

Date Extracted MS: 12/09/08
Date Analyzed MS: 12/11/08 18:55
MSD: 12/11/08 19:14
Instrument/Analyst MS: NT2/VTS
MSD: NT2/VTS
Silica Gel Cleanup: No

Sample Amount MS: 5.21 g-dry-wt
MSD: 5.29 g-dry-wt
Final Extract Volume MS: 0.5 mL
MSD: 0.5 mL
Dilution Factor MS: 1.00
MSD: 1.00
Alumina Cleanup: Yes
Moisture: 15.7%

Analyte	Sample	MS	Spike Added-MS	MS Recovery	MSD	Spike Added-MSD	MSD Recovery	RPD
Tributyltin Ion	< 3.5 U	35.6	42.8	83.2%	36.7	42.1	87.2%	3.0%
Dibutyltin Ion	18.8	40.6	36.8	59.2%	55.3	36.2	101%	30.7%
Butyltin Ion	6.1	21.6	29.9	51.8%	27.4	29.4	72.4%	23.7%

Results reported in $\mu\text{g}/\text{kg}$
RPD calculated using sample concentrations per SW846.

ORGANICS ANALYSIS DATA SHEET
Tributyl Tins by Krone 1988 SIM GC/MS
Page 1 of 1

Sample ID: COMP B-L
MATRIX SPIKE

Lab Sample ID: OC80D
LIMS ID: 08-32712
Matrix: Sediment
Data Release Authorized:
Reported: 12/15/08

QC Report No: OC80-Newfields Northwest
Project: MARINA PARK
Event: NA
Date Sampled: 11/26/08
Date Received: 12/05/08

Date Extracted: 12/09/08
Date Analyzed: 12/11/08 18:55
Instrument/Analyst: NT2/VTS
Silica Gel Cleanup: No

Sample Amount: 5.21 g-dry-wt
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00
Alumina Cleanup: Yes
Moisture: 15.7%

CAS Number	Analyte	RL	Result	Q
TBT_ION	Tributyltin Ion	3.7	---	
DET_ION	Dibutyltin Ion	5.6	---	
BT_ION	Butyltin Ion	3.9	---	

Reported in $\mu\text{g}/\text{kg}$ (ppb)

TBT Surrogate Recovery

Tripropyl Tin Chloride	96.0%
Tripentyl Tin Chloride	102%

ORGANICS ANALYSIS DATA SHEET
Tributyl Tins by Krone 1988 SIM GC/MS
Page 1 of 1

Sample ID: COMP B-L
MATRIX SPIKE DUP

Lab Sample ID: OC80D
LIMS ID: 08-32712
Matrix: Sediment
Data Release Authorized: 
Reported: 12/15/08

QC Report No: OC80-Newfields Northwest
Project: MARINA PARK
Event: NA
Date Sampled: 11/26/08
Date Received: 12/05/08

Date Extracted: 12/09/08
Date Analyzed: 12/11/08 19:14
Instrument/Analyst: NT2/VTS
Silica Gel Cleanup: No

Sample Amount: 5.29 g-dry-wt
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00
Alumina Cleanup: Yes
Moisture: 15.7%

CAS Number	Analyte	RL	Result	Q
TBT_ION	Tributyltin Ion	3.7	---	
DBT_ION	Dibutyltin Ion	5.5	---	
BT_ION	Butyltin Ion	3.9	---	

Reported in $\mu\text{g}/\text{kg}$ (ppb)

TBT Surrogate Recovery

Tripropyl Tin Chloride	97.3%
Tripentyl Tin Chloride	106%

ORGANICS ANALYSIS DATA SHEET
Tributyl Tins by Krone 1988 SIM GC/MS
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Sample ID: MB-120908
METHOD BLANK

Lab Sample ID: MB-120908
LIMS ID: 08-32712
Matrix: Sediment
Data Release Authorized:
Reported: 12/15/08

QC Report No: OC80-Newfields Northwest
Project: MARINA PARK
Event: NA
Date Sampled: NA
Date Received: NA

Date Extracted: 12/09/08
Date Analyzed: 12/11/08 16:58
Instrument/Analyst: NT2/VTS
Silica Gel Cleanup: No

Sample Amount: 5.00 g-dry-wt
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00
Alumina Cleanup: Yes

CAS Number	Analyte	RL	Result	Q
TBT_ION	Tributyltin Ion	3.9	< 3.9	U
DBT_ION	Dibutyltin Ion	5.8	< 5.8	U
BT_ION	Butyltin Ion	4.1	< 4.1	U

Reported in $\mu\text{g}/\text{kg}$ (ppb)

TBT Surrogate Recovery

Tripropyl Tin Chloride	83.9%
Tripropyl Tin Chloride	170%



ORGANICS ANALYSIS DATA SHEET
 Tributyl Tins by Krone 1988 SIM GC/MS
 Page 1 of 1

Sample ID: LCS-120908
 LAB CONTROL SAMPLE

Lab Sample ID: LCS-120908
 LIMS ID: 08-32712
 Matrix: Sediment
 Data Release Authorized: *AS*
 Reported: 12/15/08

QC Report No: OC80-Newfields Northwest
 Project: MARINA PARK
 Date Sampled: NA
 Date Received: NA

Date Extracted LCS: 12/09/08
 Date Analyzed LCS: 12/11/08 17:18
 Instrument/Analyst LCS: NT2/VTS
 Silica Gel Cleanup: No

Sample Amount LCS: 5.00 g-dry-wt
 Final Extract Volume LCS: 0.50 mL
 Dilution Factor LCS: 1.00
 Alumina Cleanup: Yes

Analyte	LCS	Spike Added	Recovery
Tributyltin Ion	35.8	44.6	80.3%
Dibutyltin Ion	26.7	38.4	69.5%
Butyltin Ion	23.7	31.2	76.0%

Reported in $\mu\text{g/kg}$ (ppb)

TBT Surrogate Recovery

Tripropyl Tin Chloride	94.6%
Tripentyl Tin Chloride	268%



ORGANICS ANALYSIS DATA SHEET
 PSDDA PCB by GC/ECD
 Page 1 of 1

Sample ID: COMP A-U
 SAMPLE

Lab Sample ID: OC80A
 LIMS ID: 08-32709
 Matrix: Sediment
 Data Release Authorized: *VTS*
 Reported: 12/11/08

QC Report No: OC80-Newfields Northwest
 Project: MARINA PARK

Date Sampled: 11/26/08
 Date Received: 12/05/08

Date Extracted: 12/09/08
 Date Analyzed: 12/10/08 14:57
 Instrument/Analyst: ECD5/JGR
 GPC Cleanup: No
 Sulfur Cleanup: Yes
 Acid Cleanup: Yes
 Florisil Cleanup: No

Sample Amount: 25.6 g-dry-wt
 Final Extract Volume: 5.0 mL
 Dilution Factor: 1.00
 Silica Gel: No

Percent Moisture: 15.1%

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	20	< 20 U
53469-21-9	Aroclor 1242	20	< 20 U
12672-29-6	Aroclor 1248	20	< 20 U
11097-69-1	Aroclor 1254	20	< 20 U
11096-82-5	Aroclor 1260	20	< 20 U
11104-28-2	Aroclor 1221	20	< 20 U
11141-16-5	Aroclor 1232	20	< 20 U

Reported in $\mu\text{g}/\text{kg}$ (ppb)

PCB Surrogate Recovery

Decachlorobiphenyl	85.2%
Tetrachlorometaxylene	89.2%

ORGANICS ANALYSIS DATA SHEET
PSDDA PCB by GC/ECD
Page 1 of 1

Sample ID: MB-120908
METHOD BLANK

Lab Sample ID: MB-120908
LIMS ID: 08-32710
Matrix: Sediment
Data Release Authorized: *VBS*
Reported: 12/11/08

QC Report No: OC80-Newfields Northwest
Project: MARINA PARK

Date Sampled: NA
Date Received: NA

Date Extracted: 12/09/08
Date Analyzed: 12/10/08 14:05
Instrument/Analyst: ECD5/JGR
GPC Cleanup: No
Sulfur Cleanup: Yes
Acid Cleanup: Yes
Florisil Cleanup: No

Sample Amount: 25.0 g
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: No

Percent Moisture: NA

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	20	< 20 U
53469-21-9	Aroclor 1242	20	< 20 U
12672-29-6	Aroclor 1248	20	< 20 U
11097-69-1	Aroclor 1254	20	< 20 U
11096-82-5	Aroclor 1260	20	< 20 U
11104-28-2	Aroclor 1221	20	< 20 U
11141-16-5	Aroclor 1232	20	< 20 U

Reported in $\mu\text{g}/\text{kg}$ (ppb)

PCB Surrogate Recovery

Decachlorobiphenyl	84.8%
Tetrachlorometaxylene	85.5%

ORGANICS ANALYSIS DATA SHEET

PSDDA PCB by GC/ECD

Page 1 of 1

Sample ID: COMP A-1
SAMPLE

Lab Sample ID: OC80B

LIMS ID: 08-32710

Matrix: Sediment

Data Release Authorized: *VBS*

Reported: 12/11/08

QC Report No: OC80-Newfields Northwest

Project: MARINA PARK

Date Sampled: 11/26/08

Date Received: 12/05/08

Date Extracted: 12/09/08

Date Analyzed: 12/10/08 15:14

Instrument/Analyst: ECD5/JGR

GPC Cleanup: No

Sulfur Cleanup: Yes

Acid Cleanup: Yes

Florisil Cleanup: No

Sample Amount: 25.4 g-dry-wt

Final Extract Volume: 5.0 mL

Dilution Factor: 1.00

Silica Gel: No

Percent Moisture: 12.8%

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	20	< 20 U
53469-21-9	Aroclor 1242	20	< 20 U
12672-29-6	Aroclor 1248	20	< 20 U
11097-69-1	Aroclor 1254	20	< 20 U
11096-82-5	Aroclor 1260	20	< 20 U
11104-28-2	Aroclor 1221	20	< 20 U
11141-16-5	Aroclor 1232	20	< 20 U

Reported in $\mu\text{g}/\text{kg}$ (ppb)

PCB Surrogate Recovery

Decachlorobiphenyl	78.0%
Tetrachlorometaxylene	81.5%

ORGANICS ANALYSIS DATA SHEET
PSDDA PCB by GC/ECD
Page 1 of 1

Sample ID: COMP A-L
MATRIX SPIKE

Lab Sample ID: OC80B
LIMS ID: 08-32710
Matrix: Sediment
Data Release Authorized: *VJB*
Reported: 12/11/08

QC Report No: OC80-Newfields Northwest
Project: MARINA PARK

Date Sampled: 11/26/08
Date Received: 12/05/08

Date Extracted: 12/09/08
Date Analyzed: 12/10/08 15:31
Instrument/Analyst: ECD5/JGR
GPC Cleanup: No
Sulfur Cleanup: Yes
Acid Cleanup: Yes
Florisil Cleanup: No

Sample Amount: 25.3 g-dry-wt
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: No
Percent Moisture: 12.8%

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	20	---
53469-21-9	Aroclor 1242	20	< 20 U
12672-29-6	Aroclor 1248	20	< 20 U
11097-69-1	Aroclor 1254	20	< 20 U
11096-82-5	Aroclor 1260	20	---
11104-28-2	Aroclor 1221	20	< 20 U
11141-16-5	Aroclor 1232	20	< 20 U

Reported in $\mu\text{g}/\text{kg}$ (ppb)

PCB Surrogate Recovery

Decachlorobiphenyl	85.5%
Tetrachlorometaxylene	86.8%

ORGANICS ANALYSIS DATA SHEET
PSDDA PCB by GC/ECD
Page 1 of 1

Sample ID: COMP A-L
MATRIX SPIKE DUP

Lab Sample ID: OC80B
LIMS ID: 08-32710
Matrix: Sediment
Data Release Authorized: *VTS*
Reported: 12/11/08

QC Report No: OC80-Newfields Northwest
Project: MARINA PARK

Date Sampled: 11/26/08
Date Received: 12/05/08

Date Extracted: 12/09/08
Date Analyzed: 12/10/08 15:48
Instrument/Analyst: ECD5/JGR
GPC Cleanup: No
Sulfur Cleanup: Yes
Acid Cleanup: Yes
Florisil Cleanup: No

Sample Amount: 25.4 g-dry-wt
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: No
Percent Moisture: 12.8%

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	20	---
53469-21-9	Aroclor 1242	20	< 20 U
12672-29-6	Aroclor 1248	20	< 20 U
11097-69-1	Aroclor 1254	20	< 20 U
11096-82-5	Aroclor 1260	20	---
11104-28-2	Aroclor 1221	20	< 20 U
11141-16-5	Aroclor 1232	20	< 20 U

Reported in $\mu\text{g}/\text{kg}$ (ppb)

PCB Surrogate Recovery

Decachlorobiphenyl	84.0%
Tetrachlorometaxylene	86.8%

ORGANICS ANALYSIS DATA SHEET

PSDDA PCB by GC/ECD

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Sample ID: COMP B-U
SAMPLE

Lab Sample ID: OC80C

LIMS ID: 08-32711

Matrix: Sediment

Data Release Authorized: *VTS*

Reported: 12/11/08

QC Report No: OC80-Newfields Northwest

Project: MARINA PARK

Date Sampled: 11/26/08

Date Received: 12/05/08

Date Extracted: 12/09/08

Date Analyzed: 12/10/08 16:05

Instrument/Analyst: ECD5/JGR

GPC Cleanup: No

Sulfur Cleanup: Yes

Acid Cleanup: Yes

Florisil Cleanup: No

Sample Amount: 25.1 g-dry-wt

Final Extract Volume: 5.0 mL

Dilution Factor: 1.00

Silica Gel: No

Percent Moisture: 13.7%

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	20	< 20 U
53469-21-9	Aroclor 1242	20	< 20 U
12672-29-6	Aroclor 1248	20	< 20 U
11097-69-1	Aroclor 1254	20	< 20 U
11096-82-5	Aroclor 1260	20	< 20 U
11104-28-2	Aroclor 1221	20	< 20 U
11141-16-5	Aroclor 1232	20	< 20 U

Reported in $\mu\text{g}/\text{kg}$ (ppb)

PCB Surrogate Recovery

Decachlorobiphenyl	83.5%
Tetrachlorometaxylene	86.0%



ORGANICS ANALYSIS DATA SHEET
 PSDDA PCB by GC/ECD
 Page 1 of 1

Sample ID: COMP B-L
 SAMPLE

Lab Sample ID: OC80D
 LIMS ID: 08-32712
 Matrix: Sediment
 Data Release Authorized: *VTS*
 Reported: 12/11/08

QC Report No: OC80-Newfields Northwest
 Project: MARINA PARK

Date Sampled: 11/26/08
 Date Received: 12/05/08

Date Extracted: 12/09/08
 Date Analyzed: 12/10/08 16:23
 Instrument/Analyst: ECD5/JGR
 GPC Cleanup: No
 Sulfur Cleanup: Yes
 Acid Cleanup: Yes
 Florisil Cleanup: No

Sample Amount: 25.4 g-dry-wt
 Final Extract Volume: 5.0 mL
 Dilution Factor: 1.00
 Silica Gel: No
 Percent Moisture: 15.7%

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	20	< 20 U
53469-21-9	Aroclor 1242	20	< 20 U
12672-29-6	Aroclor 1248	20	< 20 U
11097-69-1	Aroclor 1254	20	< 20 U
11096-82-5	Aroclor 1260	20	< 20 U
11104-28-2	Aroclor 1221	20	< 20 U
11141-16-5	Aroclor 1232	20	< 20 U

Reported in $\mu\text{g}/\text{kg}$ (ppb)

PCB Surrogate Recovery

Decachlorobiphenyl	84.2%
Tetrachlorometaxylene	88.0%

SW8082/PCB SOIL/SEDIMENT SURROGATE RECOVERY SUMMARY

Matrix: Sediment

QC Report No: OC80-Newfields Northwest
Project: MARINA PARK

Client ID	DCBP % REC	DCBP LCL-UCL	TCMX % REC	TCMX LCL-UCL	TOT OUT
COMP A-U	85.2%	43-148	89.2%	48-123	0
MB-120908	84.8%	65-117	85.5%	63-119	0
LCS-120908	86.5%	65-117	82.5%	63-119	0
COMP A-L	78.0%	43-148	81.5%	48-123	0
COMP A-L MS	85.5%	43-148	86.8%	48-123	0
COMP A-L MSD	84.0%	43-148	86.8%	48-123	0
COMP B-U	83.5%	43-148	86.0%	48-123	0
COMP B-L	84.2%	43-148	88.0%	48-123	0

PSDDA Control Limits
Prep Method: SW3550B
Log Number Range: 08-32709 to 08-32712

ORGANICS ANALYSIS DATA SHEET

PSDDA PCB by GC/ECD

Page 1 of 1

Sample ID: COMP A-L
MS/MSD

Lab Sample ID: OC80B

LIMS ID: 08-32710

Matrix: Sediment

Data Release Authorized: *VTS*

Reported: 12/11/08

QC Report No: OC80-Newfields Northwest
Project: MARINA PARK

Date Sampled: 11/26/08

Date Received: 12/05/08

Date Extracted MS/MSD: 12/09/08

Sample Amount MS: 25.3 g-dry-wt

MSD: 25.4 g-dry-wt

Date Analyzed MS: 12/10/08 15:31

Final Extract Volume MS: 5.0 mL

MSD: 12/10/08 15:48

MSD: 5.0 mL

Instrument/Analyst MS: ECD5/JGR

Dilution Factor MS: 1.00

MSD: ECD5/JGR

MSD: 1.00

GPC Cleanup: No

Silica Gel: No

Sulfur Cleanup: Yes

Percent Moisture: 12.8%

Acid Cleanup: Yes

Florisil Cleanup: No

Analyte	Sample	MS	Spike Added-MS	MS Recovery	MSD	Spike Added-MSD	MSD Recovery	RPD
Aroclor 1016	< 19.7 U	86.6	98.8	87.7%	87.7	98.3	89.2%	1.3%
Aroclor 1260	< 19.7 U	94.4	98.8	95.5%	93.4	98.3	95.0%	1.1%

Results reported in $\mu\text{g}/\text{kg}$ (ppb)

RPD calculated using sample concentrations per SW846.

ORGANICS ANALYSIS DATA SHEET

PSDDA PCB by GC/ECD

Page 1 of 1

Sample ID: LCS-120908

LAB CONTROL

Lab Sample ID: LCS-120908

LIMS ID: 08-32710

Matrix: Sediment

Data Release Authorized: *VTS*

Reported: 12/11/08

QC Report No: OC80-Newfields Northwest

Project: MARINA PARK

Date Sampled: NA

Date Received: NA

Date Extracted: 12/09/08

Date Analyzed: 12/10/08 14:22

Instrument/Analyst: ECD5/JGR

GPC Cleanup: No

Sulfur Cleanup: Yes

Acid Cleanup: Yes

Florisil Cleanup: No

Sample Amount: 25.0 g-dry-wt

Final Extract Volume: 5.0 mL

Dilution Factor: 1.00

Silica Gel: No

Percent Moisture: NA

Analyte	Lab Control	Spike Added	Recovery
Aroclor 1016	84.9	100	84.9%
Aroclor 1260	100	100	100%

PCB Surrogate Recovery

Decachlorobiphenyl	86.5%
Tetrachlorometaxylene	82.5%

Results reported in $\mu\text{g}/\text{kg}$ (ppb)

SW8081 PESTICIDE SOIL/SEDIMENT SURROGATE RECOVERY SUMMARY

Matrix: Sediment

QC Report No: OC80-Newfields Northwest
Project: MARINA PARK

Client ID	DCBP	TCMX	TOT OUT
COMP A-U	78.5%	78.5%	0
COMP A-L	79.2%	77.5%	0
MB-120908	79.8%	78.5%	0
LCS-120908	79.5%	84.0%	0
COMP B-U	80.5%	80.8%	0
COMP B-U MS	78.2%	84.5%	0
COMP B-U MSD	88.0%	85.2%	0
COMP B-L	79.8%	82.8%	0

	LCS/MB LIMITS	QC LIMITS
(DCBP) = Decachlorobiphenyl	(65-125)	(52-143)
(TCMX) = Tetrachlorometaxylene	(53-112)	(43-128)

Prep Method: SW3550B
Log Number Range: 08-32709 to 08-32712

ORGANICS ANALYSIS DATA SHEET
PSDDA Pesticides/PCB by GC/ECD
Page 1 of 1

Sample ID: COMP A-U
SAMPLE

Lab Sample ID: OC80A
LIMS ID: 08-32709
Matrix: Sediment
Data Release Authorized: *AB*
Reported: 12/12/08

QC Report No: OC80-Newfields Northwest
Project: MARINA PARK
Date Sampled: 11/26/08
Date Received: 12/05/08

Date Extracted: 12/09/08
Date Analyzed: 12/11/08 11:55
Instrument/Analyst: ECD4/AAR
GPC Cleanup: No
Sulfur Cleanup: Yes
Florisol Cleanup: No
Acid Cleanup: No

Sample Amount: 25.7 g-dry-wt
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: Yes
Percent Moisture: 15.1%

CAS Number	Analyte	RL	Result
319-84-6	alpha-BHC	0.97	< 0.97 U
319-85-7	beta-BHC	0.97	< 0.97 U
319-86-8	delta-BHC	0.97	< 0.97 U
58-89-9	gamma-BHC (Lindane)	0.97	< 0.97 U
76-44-8	Heptachlor	0.97	< 0.97 U
309-00-2	Aldrin	0.97	< 0.97 U
1024-57-3	Heptachlor Epoxide	0.97	< 0.97 U
959-98-8	Endosulfan I	0.97	< 0.97 U
60-57-1	Dieldrin	2.0	< 2.0 U
72-55-9	4,4'-DDE	2.0	< 2.0 U
72-20-8	Endrin	2.0	< 2.0 U
33213-65-9	Endosulfan II	2.0	< 2.0 U
72-54-8	4,4'-DDD	2.0	< 2.0 U
1031-07-8	Endosulfan Sulfate	2.0	< 2.0 U
50-29-3	4,4'-DDT	2.0	< 2.0 U
72-43-5	Methoxychlor	9.7	< 9.7 U
7421-93-4	Endrin Aldehyde	2.0	< 2.0 U
5103-74-2	gamma Chlordane	0.97	< 0.97 U
5103-71-9	alpha Chlordane	0.97	< 0.97 U
8001-35-2	Toxaphene	97	< 97 U
789-02-6	2,4'-DDT	2.0	< 2.0 U
3424-82-6	2,4'-DDE	2.0	< 2.0 U
53-19-0	2,4'-DDD	2.0	< 2.0 U

Reported in $\mu\text{g}/\text{kg}$ (ppb)

Pest/PCB Surrogate Recovery

Decachlorobiphenyl	78.5%
Tetrachlorometaxylene	78.5%

ORGANICS ANALYSIS DATA SHEET
PSDDA Pesticides/PCB by GC/ECD
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Sample ID: COMP A-L
SAMPLE

Lab Sample ID: OC80B
LIMS ID: 08-32710
Matrix: Sediment
Data Release Authorized: 
Reported: 12/12/08

QC Report No: OC80-Newfields Northwest
Project: MARINA PARK

Date Sampled: 11/26/08
Date Received: 12/05/08

Date Extracted: 12/09/08
Date Analyzed: 12/11/08 12:15
Instrument/Analyst: ECD4/AAR
GPC Cleanup: No
Sulfur Cleanup: Yes
Florisil Cleanup: No
Acid Cleanup: No

Sample Amount: 25.6 g-dry-wt
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: Yes
Percent Moisture: 12.8%

CAS Number	Analyte	RL	Result
319-84-6	alpha-BHC	0.98	< 0.98 U
319-85-7	beta-BHC	0.98	< 0.98 U
319-86-8	delta-BHC	0.98	< 0.98 U
58-89-9	gamma-BHC (Lindane)	0.98	< 0.98 U
76-44-8	Heptachlor	0.98	< 0.98 U
309-00-2	Aldrin	0.98	< 0.98 U
1024-57-3	Heptachlor Epoxide	0.98	< 0.98 U
959-98-8	Endosulfan I	0.98	< 0.98 U
60-57-1	Dieldrin	2.0	< 2.0 U
72-55-9	4,4'-DDE	2.0	< 2.0 U
72-20-8	Endrin	2.0	< 2.0 U
33213-65-9	Endosulfan II	2.0	< 2.0 U
72-54-8	4,4'-DDD	2.0	< 2.0 U
1031-07-8	Endosulfan Sulfate	2.0	< 2.0 U
50-29-3	4,4'-DDT	2.0	< 2.0 U
72-43-5	Methoxychlor	9.8	< 9.8 U
7421-93-4	Endrin Aldehyde	2.0	< 2.0 U
5103-74-2	gamma Chlordane	0.98	< 0.98 U
5103-71-9	alpha Chlordane	0.98	< 0.98 U
8001-35-2	Toxaphene	98	< 98 U
789-02-6	2,4'-DDT	2.0	< 2.0 U
3424-82-6	2,4'-DDE	2.0	< 2.0 U
53-19-0	2,4'-DDD	2.0	< 2.0 U

Reported in $\mu\text{g}/\text{kg}$ (ppb)

Pest/PCB Surrogate Recovery

Decachlorobiphenyl	79.2%
Tetrachlorometaxylene	77.5%

ORGANICS ANALYSIS DATA SHEET
PSDDA Pesticides/PCB by GC/ECD
Page 1 of 1

Sample ID: COMP B-U
SAMPLE

Lab Sample ID: OC80C
LIMS ID: 08-32711
Matrix: Sediment
Data Release Authorized: 
Reported: 12/12/08

QC Report No: OC80-Newfields Northwest
Project: MARINA PARK

Date Sampled: 11/26/08
Date Received: 12/05/08

Date Extracted: 12/09/08
Date Analyzed: 12/11/08 12:35
Instrument/Analyst: ECD4/AAR
GPC Cleanup: No
Sulfur Cleanup: Yes
Florisil Cleanup: No
Acid Cleanup: No

Sample Amount: 25.2 g-dry-wt
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: Yes
Percent Moisture: 13.7%

CAS Number	Analyte	RL	Result
319-84-6	alpha-BHC	0.99	< 0.99 U
319-85-7	beta-BHC	0.99	< 0.99 U
319-86-8	delta-BHC	0.99	< 0.99 U
58-89-9	gamma-BHC (Lindane)	0.99	< 0.99 U
76-44-8	Heptachlor	0.99	< 0.99 U
309-00-2	Aldrin	0.99	< 0.99 U
1024-57-3	Heptachlor Epoxide	0.99	< 0.99 U
959-98-8	Endosulfan I	0.99	< 0.99 U
60-57-1	Dieldrin	2.0	< 2.0 U
72-55-9	4,4'-DDE	2.0	< 2.0 U
72-20-8	Endrin	2.0	< 2.0 U
33213-65-9	Endosulfan II	2.0	< 2.0 U
72-54-8	4,4'-DDD	2.0	< 2.0 U
1031-07-8	Endosulfan Sulfate	2.0	< 2.0 U
50-29-3	4,4'-DDT	2.0	< 2.0 U
72-43-5	Methoxychlor	9.9	< 9.9 U
7421-93-4	Endrin Aldehyde	2.0	< 2.0 U
5103-74-2	gamma Chlordane	0.99	< 0.99 U
5103-71-9	alpha Chlordane	0.99	< 0.99 U
8001-35-2	Toxaphene	99	< 99 U
789-02-6	2,4'-DDT	2.0	< 2.0 U
3424-82-6	2,4'-DDE	2.0	< 2.0 U
53-19-0	2,4'-DDD	2.0	< 2.0 U

Reported in $\mu\text{g}/\text{kg}$ (ppb)

Pest/PCB Surrogate Recovery

Decachlorobiphenyl	80.5%
Tetrachlorometaxylene	80.8%

ORGANICS ANALYSIS DATA SHEET
PSDDA Pesticides/PCB by GC/ECD
Page 1 of 1

Sample ID: COMP B-L
SAMPLE

Lab Sample ID: OC80D
LIMS ID: 08-32712
Matrix: Sediment
Data Release Authorized:
Reported: 12/12/08

QC Report No: OC80-Newfields Northwest
Project: MARINA PARK

Date Sampled: 11/26/08
Date Received: 12/05/08

Date Extracted: 12/09/08
Date Analyzed: 12/11/08 14:21
Instrument/Analyst: ECD4/AAR
GPC Cleanup: No
Sulfur Cleanup: Yes
Florisil Cleanup: No
Acid Cleanup: No

Sample Amount: 25.5 g-dry-wt
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: Yes
Percent Moisture: 15.7%

CAS Number	Analyte	RL	Result
319-84-6	alpha-BHC	0.98	< 0.98 U
319-85-7	beta-BHC	0.98	< 0.98 U
319-86-8	delta-BHC	0.98	< 0.98 U
58-89-9	gamma-BHC (Lindane)	0.98	< 0.98 U
76-44-8	Heptachlor	0.98	< 0.98 U
309-00-2	Aldrin	0.98	< 0.98 U
1024-57-3	Heptachlor Epoxide	0.98	< 0.98 U
959-98-8	Endosulfan I	0.98	< 0.98 U
60-57-1	Dieldrin	2.0	< 2.0 U
72-55-9	4,4'-DDE	2.0	< 2.0 U
72-20-8	Endrin	2.0	< 2.0 U
33213-65-9	Endosulfan II	2.0	< 2.0 U
72-54-8	4,4'-DDD	2.0	< 2.0 U
1031-07-8	Endosulfan Sulfate	2.0	< 2.0 U
50-29-3	4,4'-DDT	2.0	< 2.0 U
72-43-5	Methoxychlor	9.8	< 9.8 U
7421-93-4	Endrin Aldehyde	2.0	< 2.0 U
5103-74-2	gamma Chlordane	0.98	< 0.98 U
5103-71-9	alpha Chlordane	0.98	< 0.98 U
8001-35-2	Toxaphene	98	< 98 U
789-02-6	2,4'-DDT	2.0	< 2.0 U
3424-82-6	2,4'-DDE	2.0	< 2.0 U
53-19-0	2,4'-DDD	2.0	< 2.0 U

Reported in $\mu\text{g}/\text{kg}$ (ppb)

Pest/PCB Surrogate Recovery

Decachlorobiphenyl	79.8%
Tetrachlorometaxylene	82.8%

ORGANICS ANALYSIS DATA SHEET
PSDDA Pesticides/PCB by GC/ECD
Page 1 of 1

Sample ID: COMP B-U
MS/MSD

Lab Sample ID: OC80C

QC Report No: OC80-Newfields Northwest
Project: MARINA PARK

LIMS ID: 08-32711

Matrix: Sediment

Data Release Authorized:

Date Sampled: 11/26/08

Reported: 12/12/08

Date Received: 12/05/08

Date Extracted MS/MSD: 12/09/08

Sample Amount MS: 25.2 g-dry-wt

MSD: 25.0 g-dry-wt

Date Analyzed MS: 12/11/08 13:41

Final Extract Volume MS: 5.0 mL

MSD: 12/11/08 14:01

MSD: 5.0 mL

Instrument/Analyst MS: ECD4/AAR

Dilution Factor MS: 1.00

MSD: ECD4/AAR

MSD: 1.00

GPC Cleanup: No

Silica Gel: Yes

Sulfur Cleanup: Yes

Percent Moisture: 13.7%

Florisil Cleanup: No

Analyte	Sample	MS	Spike Added-MS	MS Recovery	MSD	Spike Added-MSD	MSD Recovery	RPD
alpha-BHC	< 0.991	3.38	3.97	85.1%	3.59	3.99	90.0%	6.0%
beta-BHC	< 0.991	3.64	3.97	91.7%	3.97	3.99	99.5%	8.7%
delta-BHC	< 0.991	3.12	3.97	78.6%	3.77	3.99	94.5%	18.9%
gamma-BHC (Lindane)	< 0.991	3.38	3.97	85.1%	3.69	3.99	92.5%	8.8%
Heptachlor	< 0.991	3.30	3.97	83.1%	3.93	3.99	98.5%	17.4%
Aldrin	< 0.991	3.24	3.97	81.6%	3.87	3.99	97.0%	17.7%
Heptachlor Epoxide	< 0.991	3.54	3.97	89.2%	4.07	3.99	102%	13.9%
Endosulfan I	< 0.991	3.40	3.97	85.6%	3.79	3.99	95.0%	10.8%
Dieldrin	< 1.98	7.17	7.95	90.2%	7.80	7.98	97.7%	8.4%
4,4'-DDE	< 1.98	7.49	7.95	94.2%	8.14	7.98	102%	8.3%
Endrin	< 1.98	6.83	7.95	85.9%	7.35	7.98	92.1%	7.3%
Endosulfan II	< 1.98	6.95	7.95	87.4%	7.41	7.98	92.9%	6.4%
4,4'-DDD	< 1.98	6.79	7.95	85.4%	7.19	7.98	90.1%	5.7%
Endosulfan Sulfate	< 1.98	5.54	7.95	69.7%	6.17	7.98	77.3%	10.8%
4,4'-DDT	< 1.98	7.13	7.95	89.7%	7.60	7.98	95.2%	6.4%
Methoxychlor	< 9.91	32.8	39.7	82.6%	35.7	39.9	89.5%	8.5%
Endrin Aldehyde	< 1.98	5.38	7.95	67.7%	5.43	7.98	68.0%	0.9%
gamma Chlordane	< 0.991	3.54	3.97	89.2%	3.93	3.99	98.5%	10.4%
alpha Chlordane	< 0.991	3.36	3.97	84.6%	3.69	3.99	92.5%	9.4%

Reported in µg/kg (ppb)

RPD calculated using sample concentrations per SW846.

ORGANICS ANALYSIS DATA SHEET
PSDDA Pesticides/PCB by GC/ECD
Page 1 of 1

Sample ID: COMP B-U
MATRIX SPIKE

Lab Sample ID: OC80C
LIMS ID: 08-32711
Matrix: Sediment
Data Release Authorized:
Reported: 12/12/08

QC Report No: OC80-Newfields Northwest
Project: MARINA PARK

Date Sampled: 11/26/08
Date Received: 12/05/08

Date Extracted: 12/09/08
Date Analyzed: 12/11/08 13:41
Instrument/Analyst: ECD4/AAR
GPC Cleanup: No
Sulfur Cleanup: Yes
Florisil Cleanup: No
Acid Cleanup: No

Sample Amount: 25.2 g-dry-wt
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: Yes
Percent Moisture: 13.7%

CAS Number	Analyte	RL	Result
319-84-6	alpha-BHC	0.99	---
319-85-7	beta-BHC	0.99	---
319-86-8	delta-BHC	0.99	---
58-89-9	gamma-BHC (Lindane)	0.99	---
76-44-8	Heptachlor	0.99	---
309-00-2	Aldrin	0.99	---
1024-57-3	Heptachlor Epoxide	0.99	---
959-98-8	Endosulfan I	0.99	---
60-57-1	Dieldrin	2.0	---
72-55-9	4,4'-DDE	2.0	---
72-20-8	Endrin	2.0	---
33213-65-9	Endosulfan II	2.0	---
72-54-8	4,4'-DDD	2.0	---
1031-07-8	Endosulfan Sulfate	2.0	---
50-29-3	4,4'-DDT	2.0	---
72-43-5	Methoxychlor	9.9	---
7421-93-4	Endrin Aldehyde	2.0	---
5103-74-2	gamma Chlordane	0.99	---
5103-71-9	alpha Chlordane	0.99	---
8001-35-2	Toxaphene	99	< 99 U
789-02-6	2,4'-DDT	2.0	< 2.0 U
3424-82-6	2,4'-DDE	2.0	< 2.0 U
53-19-0	2,4'-DDD	2.0	< 2.0 U

Reported in $\mu\text{g}/\text{kg}$ (ppb)

Pest/PCB Surrogate Recovery

Decachlorobiphenyl	78.2%
Tetrachlorometaxylene	84.5%

ORGANICS ANALYSIS DATA SHEET
PSDDA Pesticides/PCB by GC/ECD
Page 1 of 1

Sample ID: COMP B-U
MATRIX SPIKE DUP

Lab Sample ID: OC80C
LIMS ID: 08-32711
Matrix: Sediment
Data Release Authorized:
Reported: 12/12/08

QC Report No: OC80-Newfields Northwest
Project: MARINA PARK

Date Sampled: 11/26/08
Date Received: 12/05/08

Date Extracted: 12/09/08
Date Analyzed: 12/11/08 14:01
Instrument/Analyst: ECD4/AAR
GPC Cleanup: No
Sulfur Cleanup: Yes
Florisil Cleanup: No
Acid Cleanup: No

Sample Amount: 25.0 g-dry-wt
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: Yes
Percent Moisture: 13.7%

CAS Number	Analyte	RL	Result
319-84-6	alpha-BHC	1.0	---
319-85-7	beta-BHC	1.0	---
319-86-8	delta-BHC	1.0	---
58-89-9	gamma-BHC (Lindane)	1.0	---
76-44-8	Heptachlor	1.0	---
309-00-2	Aldrin	1.0	---
1024-57-3	Heptachlor Epoxide	1.0	---
959-98-8	Endosulfan I	1.0	---
60-57-1	Dieldrin	2.0	---
72-55-9	4,4'-DDE	2.0	---
72-20-8	Endrin	2.0	---
33213-65-9	Endosulfan II	2.0	---
72-54-8	4,4'-DDD	2.0	---
1031-07-8	Endosulfan Sulfate	2.0	---
50-29-3	4,4'-DDT	2.0	---
72-43-5	Methoxychlor	10	---
7421-93-4	Endrin Aldehyde	2.0	---
5103-74-2	gamma Chlordane	1.0	---
5103-71-9	alpha Chlordane	1.0	---
8001-35-2	Toxaphene	100	< 100 U
789-02-6	2,4'-DDT	2.0	< 2.0 U
3424-82-6	2,4'-DDE	2.0	< 2.0 U
53-19-0	2,4'-DDD	2.0	< 2.0 U

Reported in $\mu\text{g}/\text{kg}$ (ppb)

Pest/PCB Surrogate Recovery

Decachlorobiphenyl	88.0%
Tetrachlorometaxylene	85.2%

ORGANICS ANALYSIS DATA SHEET
PSDDA Pesticides/PCB by GC/ECD
Page 1 of 1

Sample ID: MB-120908
METHOD BLANK

Lab Sample ID: MB-120908
LIMS ID: 08-32711
Matrix: Sediment
Data Release Authorized:
Reported: 12/12/08

QC Report No: OC80-Newfields Northwest
Project: MARINA PARK

Date Sampled: NA
Date Received: NA

Date Extracted: 12/09/08
Date Analyzed: 12/11/08 11:14
Instrument/Analyst: ECD4/AAR
GPC Cleanup: No
Sulfur Cleanup: Yes
Florisil Cleanup: No
Acid Cleanup: No

Sample Amount: 25.0 g-dry-wt
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: Yes
Percent Moisture: NA

CAS Number	Analyte	RL	Result
319-84-6	alpha-BHC	1.0	< 1.0 U
319-85-7	beta-BHC	1.0	< 1.0 U
319-86-8	delta-BHC	1.0	< 1.0 U
58-89-9	gamma-BHC (Lindane)	1.0	< 1.0 U
76-44-8	Heptachlor	1.0	< 1.0 U
309-00-2	Aldrin	1.0	< 1.0 U
1024-57-3	Heptachlor Epoxide	1.0	< 1.0 U
959-98-8	Endosulfan I	1.0	< 1.0 U
60-57-1	Dieldrin	2.0	< 2.0 U
72-55-9	4,4'-DDE	2.0	< 2.0 U
72-20-8	Endrin	2.0	< 2.0 U
33213-65-9	Endosulfan II	2.0	< 2.0 U
72-54-8	4,4'-DDD	2.0	< 2.0 U
1031-07-8	Endosulfan Sulfate	2.0	< 2.0 U
50-29-3	4,4'-DDT	2.0	< 2.0 U
72-43-5	Methoxychlor	10	< 10 U
7421-93-4	Endrin Aldehyde	2.0	< 2.0 U
5103-74-2	gamma Chlordane	1.0	< 1.0 U
5103-71-9	alpha Chlordane	1.0	< 1.0 U
8001-35-2	Toxaphene	100	< 100 U
789-02-6	2,4'-DDT	2.0	< 2.0 U
3424-82-6	2,4'-DDE	2.0	< 2.0 U
53-19-0	2,4'-DDD	2.0	< 2.0 U

Reported in $\mu\text{g}/\text{kg}$ (ppb)

Pest/PCB Surrogate Recovery

Decachlorobiphenyl	79.8%
Tetrachlorometaxylene	78.5%

ORGANICS ANALYSIS DATA SHEET
PSDDA Pesticides/PCB by GC/ECD
Page 1 of 1

Sample ID: LCS-120908
LAB CONTROL

Lab Sample ID: LCS-120908
LIMS ID: 08-32711
Matrix: Sediment
Data Release Authorized: 
Reported: 12/12/08

QC Report No: OC80-Newfields Northwest
Project: MARINA PARK

Date Sampled: 11/26/08
Date Received: 12/05/08

Date Extracted: 12/09/08
Date Analyzed: 12/11/08 11:35
Instrument/Analyst: ECD4/AAR
GPC Cleanup: No
Sulfur Cleanup: Yes
Florisil Cleanup: No

Sample Amount: 25.0 g-dry-wt
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: Yes
Percent Moisture: NA

Analyte	Lab Control	Spike Added	Recovery
alpha-BHC	3.48	4.00	87.0%
beta-BHC	3.70	4.00	92.5%
delta-BHC	3.62	4.00	90.5%
gamma-BHC (Lindane)	3.66	4.00	91.5%
Heptachlor	3.80	4.00	95.0%
Aldrin	3.82	4.00	95.5%
Heptachlor Epoxide	3.92	4.00	98.0%
Endosulfan I	3.74	4.00	93.5%
Dieldrin	7.64	8.00	95.5%
4,4'-DDE	7.98	8.00	99.8%
Endrin	7.16	8.00	89.5%
Endosulfan II	7.06	8.00	88.2%
4,4'-DDD	6.90	8.00	86.2%
Endosulfan Sulfate	5.86	8.00	73.2%
4,4'-DDT	7.28	8.00	91.0%
Methoxychlor	34.4	40.0	86.0%
Endrin Aldehyde	4.98	8.00	62.2%
gamma Chlordane	3.82	4.00	95.5%
alpha Chlordane	3.68	4.00	92.0%

Pest/PCB Surrogate Recovery

Decachlorobiphenyl	79.5%
Tetrachlorometaxylene	84.0%

Reported in $\mu\text{g}/\text{kg}$ (ppb)

SIM SW8270 SURROGATE RECOVERY SUMMARY

Matrix: Sediment

QC Report No: OC80-Newfields Northwest
Project: MARINA PARK

Client ID	MNP	DBA	TOT OUT
MB-120908	58.3%	81.0%	0
LCS-120908	62.0%	83.0%	0
COMP A-U	58.3%	83.3%	0
COMP A-U MS	62.3%	78.3%	0
COMP A-U MSD	63.0%	79.7%	0
COMP A-L	59.7%	75.7%	0
COMP B-U	58.7%	76.3%	0
COMP B-L	58.7%	74.0%	0

	LCS/MB LIMITS	QC LIMITS
(MNP) = d10-2-Methylnaphthalene	(44-100)	(37-106)
(DBA) = d14-Dibenzo(a,h)anthracene	(46-121)	(16-118)

Prep Method: SW3546
Log Number Range: 08-32709 to 08-32712



ORGANICS ANALYSIS DATA SHEET

PNAs by SW8270D-SIM GC/MS

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Sample ID: COMP A-U
SAMPLE

Lab Sample ID: OC80A

LIMS ID: 08-32709

Matrix: Sediment

Data Release Authorized: *[Signature]*

Reported: 12/12/08

QC Report No: OC80-Newfields Northwest

Project: MARINA PARK

Event: NA

Date Sampled: 11/26/08

Date Received: 12/05/08

Date Extracted: 12/09/08

Date Analyzed: 12/12/08 12:03

Instrument/Analyst: NT1/YZ

GPC Cleanup: No

Silica Gel Cleanup: Yes

Alumina Cleanup: No

Sample Amount: 10.2 g-dry-wt

Final Extract Volume: 0.5 mL

Dilution Factor: 1.00

Percent Moisture: 15.1%

CAS Number	Analyte	RL	Result
83-32-9	Acenaphthene	4.9	< 4.9 U
86-73-7	Fluorene	4.9	< 4.9 U
85-01-8	Phenanthrene	4.9	< 4.9 U
120-12-7	Anthracene	4.9	< 4.9 U
206-44-0	Fluoranthene	4.9	< 4.9 U
129-00-0	Pyrene	4.9	< 4.9 U
56-55-3	Benzo (a) anthracene	4.9	< 4.9 U
218-01-9	Chrysene	4.9	< 4.9 U
205-99-2	Benzo (b) fluoranthene	4.9	< 4.9 U
50-32-8	Benzo (a) pyrene	4.9	< 4.9 U
193-39-5	Indeno (1,2,3-cd) pyrene	4.9	< 4.9 U
53-70-3	Dibenz (a,h) anthracene	4.9	< 4.9 U
191-24-2	Benzo (g,h,i) perylene	4.9	< 4.9 U

Reported in $\mu\text{g}/\text{kg}$ (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene 58.3%
d14-Dibenzo (a,h) anthracen 83.3%

ORGANICS ANALYSIS DATA SHEET

PNAs by SW8270D-SIM GC/MS

Page 1 of 1

Sample ID: COMP A-L
SAMPLE

Lab Sample ID: OC80B
LIMS ID: 08-32710
Matrix: Sediment
Data Release Authorized:
Reported: 12/12/08

QC Report No: OC80-Newfields Northwest
Project: MARINA PARK
Event: NA
Date Sampled: 11/26/08
Date Received: 12/05/08

Date Extracted: 12/09/08
Date Analyzed: 12/12/08 13:18
Instrument/Analyst: NT1/YZ
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 10.7 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 12.8%

CAS Number	Analyte	RL	Result
83-32-9	Acenaphthene	4.7	< 4.7 U
86-73-7	Fluorene	4.7	< 4.7 U
85-01-8	Phenanthrene	4.7	< 4.7 U
120-12-7	Anthracene	4.7	< 4.7 U
206-44-0	Fluoranthene	4.7	< 4.7 U
129-00-0	Pyrene	4.7	< 4.7 U
56-55-3	Benzo(a)anthracene	4.7	< 4.7 U
218-01-9	Chrysene	4.7	< 4.7 U
205-99-2	Benzo(b)fluoranthene	4.7	< 4.7 U
50-32-8	Benzo(a)pyrene	4.7	< 4.7 U
193-39-5	Indeno(1,2,3-cd)pyrene	4.7	< 4.7 U
53-70-3	Dibenz(a,h)anthracene	4.7	< 4.7 U
191-24-2	Benzo(g,h,i)perylene	4.7	< 4.7 U

Reported in $\mu\text{g}/\text{kg}$ (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene 59.7%
d14-Dibenzo(a,h)anthracen 75.7%



ORGANICS ANALYSIS DATA SHEET
 PNAs by SW8270D-SIM GC/MS
 Page 1 of 1

Sample ID: COMP B-U
 SAMPLE

Lab Sample ID: OC80C
 LIMS ID: 08-32711
 Matrix: Sediment
 Data Release Authorized: 
 Reported: 12/12/08

QC Report No: OC80-Newfields Northwest
 Project: MARINA PARK
 Event: NA
 Date Sampled: 11/26/08
 Date Received: 12/05/08

Date Extracted: 12/09/08
 Date Analyzed: 12/12/08 13:42
 Instrument/Analyst: NT1/YZ
 GPC Cleanup: No
 Silica Gel Cleanup: Yes
 Alumina Cleanup: No

Sample Amount: 10.4 g-dry-wt
 Final Extract Volume: 0.5 mL
 Dilution Factor: 1.00
 Percent Moisture: 13.7%

CAS Number	Analyte	RL	Result
83-32-9	Acenaphthene	4.8	< 4.8 U
86-73-7	Fluorene	4.8	< 4.8 U
85-01-8	Phenanthrene	4.8	< 4.8 U
120-12-7	Anthracene	4.8	< 4.8 U
206-44-0	Fluoranthene	4.8	< 4.8 U
129-00-0	Pyrene	4.8	< 4.8 U
56-55-3	Benzo(a)anthracene	4.8	< 4.8 U
218-01-9	Chrysene	4.8	5.8
205-99-2	Benzo(b)fluoranthene	4.8	4.8
50-32-8	Benzo(a)pyrene	4.8	4.8
193-39-5	Indeno(1,2,3-cd)pyrene	4.8	7.7
53-70-3	Dibenz(a,h)anthracene	4.8	< 4.8 U
191-24-2	Benzo(g,h,i)perylene	4.8	9.6

Reported in $\mu\text{g}/\text{kg}$ (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene 58.7%
 d14-Dibenzo(a,h)anthracen 76.3%

ORGANICS ANALYSIS DATA SHEET

PNA's by SW8270D-SIM GC/MS

Page 1 of 1

Sample ID: COMP B-L
SAMPLE

Lab Sample ID: OC80D

LIMS ID: 08-32712

Matrix: Sediment

Data Release Authorized: *AR*

Reported: 12/12/08

QC Report No: OC80-Newfields Northwest

Project: MARINA PARK

Event: NA

Date Sampled: 11/26/08

Date Received: 12/05/08

Date Extracted: 12/09/08

Date Analyzed: 12/12/08 14:07

Instrument/Analyst: NT1/YZ

GPC Cleanup: No

Silica Gel Cleanup: Yes

Alumina Cleanup: No

Sample Amount: 10.2 g-dry-wt

Final Extract Volume: 0.5 mL

Dilution Factor: 1.00

Percent Moisture: 15.7%

CAS Number	Analyte	RL	Result
83-32-9	Acenaphthene	4.9	< 4.9 U
86-73-7	Fluorene	4.9	< 4.9 U
85-01-8	Phenanthrene	4.9	< 4.9 U
120-12-7	Anthracene	4.9	< 4.9 U
206-44-0	Fluoranthene	4.9	< 4.9 U
129-00-0	Pyrene	4.9	< 4.9 U
56-55-3	Benzo(a)anthracene	4.9	< 4.9 U
218-01-9	Chrysene	4.9	< 4.9 U
205-99-2	Benzo(b)fluoranthene	4.9	< 4.9 U
50-32-8	Benzo(a)pyrene	4.9	< 4.9 U
193-39-5	Indeno(1,2,3-cd)pyrene	4.9	< 4.9 U
53-70-3	Dibenz(a,h)anthracene	4.9	< 4.9 U
191-24-2	Benzo(g,h,i)perylene	4.9	< 4.9 U

Reported in $\mu\text{g}/\text{kg}$ (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene 58.7%

d14-Dibenzo(a,h)anthracene 74.0%

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Page 1 of 1

Sample ID: COMP A-U
MATRIX SPIKE

Lab Sample ID: OC80A
LIMS ID: 08-32709
Matrix: Sediment
Data Release Authorized: *[Signature]*
Reported: 12/12/08

QC Report No: OC80-Newfields Northwest
Project: MARINA PARK
Event: NA
Date Sampled: 11/26/08
Date Received: 12/05/08

Date Extracted MS/MSD: 12/09/08
Date Analyzed MS: 12/12/08 12:28
MSD: 12/12/08 12:53
Instrument/Analyst MS: NT1/YZ
MSD: NT1/YZ

Sample Amount MS: 10.3 g-dry-wt
MSD: 10.5 g-dry-wt
Final Extract Volume MS: 0.50 mL
MSD: 0.50 mL
Dilution Factor MS: 1.00
MSD: 1.00

Analyte	Sample	MS	Spike Added-MS	MS Recovery	MSD	Spike Added-MSD	MSD Recovery	RPD
Acenaphthene	< 4.9 U	86.9	146	59.5%	89.0	143	62.2%	2.4%
Fluorene	< 4.9 U	88.3	146	60.5%	91.9	143	64.3%	4.0%
Phenanthrene	< 4.9 U	93.2	146	63.8%	92.4	143	64.6%	0.9%
Anthracene	< 4.9 U	95.1	146	65.1%	93.3	143	65.2%	1.9%
Fluoranthene	< 4.9 U	105	146	71.9%	105	143	73.4%	0.0%
Pyrene	< 4.9 U	106	146	72.6%	105	143	73.4%	0.9%
Benzo(a)anthracene	< 4.9 U	100	146	68.5%	98.1	143	68.6%	1.9%
Chrysene	< 4.9 U	99.0	146	67.8%	99.0	143	69.2%	0.0%
Benzo(b)fluoranthene	< 4.9 U	89.3	146	61.2%	95.2	143	66.6%	6.4%
Benzo(a)pyrene	< 4.9 U	107	146	73.3%	107	143	74.8%	0.0%
Indeno(1,2,3-cd)pyrene	< 4.9 U	100	146	68.5%	101	143	70.6%	1.0%
Dibenz(a,h)anthracene	< 4.9 U	103	146	70.5%	102	143	71.3%	1.0%
Benzo(g,h,i)perylene	< 4.9 U	102	146	69.9%	100	143	69.9%	2.0%

Reported in $\mu\text{g}/\text{kg}$ (ppb)

RPD calculated using sample concentrations per SW846.



ORGANICS ANALYSIS DATA SHEET

PNAs by SW8270D-SIM GC/MS

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Sample ID: COMP A-U

MATRIX SPIKE

Lab Sample ID: OC80A

LIMS ID: 08-32709

Matrix: Sediment

Data Release Authorized:

Reported: 12/12/08

QC Report No: OC80-Newfields Northwest

Project: MARINA PARK

Event: NA

Date Sampled: 11/26/08

Date Received: 12/05/08

Date Extracted: 12/09/08

Date Analyzed: 12/12/08 12:28

Instrument/Analyst: NT1/YZ

GPC Cleanup: No

Silica Gel Cleanup: Yes

Alumina Cleanup: No

Sample Amount: 10.3 g-dry-wt

Final Extract Volume: 0.5 mL

Dilution Factor: 1.00

Percent Moisture: 15.1%

CAS Number	Analyte	RL	Result
83-32-9	Acenaphthene	4.8	---
86-73-7	Fluorene	4.8	---
85-01-8	Phenanthrene	4.8	---
120-12-7	Anthracene	4.8	---
206-44-0	Fluoranthene	4.8	---
129-00-0	Pyrene	4.8	---
56-55-3	Benzo (a) anthracene	4.8	---
218-01-9	Chrysene	4.8	---
205-99-2	Benzo (b) fluoranthene	4.8	---
50-32-8	Benzo (a) pyrene	4.8	---
193-39-5	Indeno (1,2,3-cd) pyrene	4.8	---
53-70-3	Dibenz (a, h) anthracene	4.8	---
191-24-2	Benzo (g, h, i) perylene	4.8	---

Reported in µg/kg (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene 62.3%

d14-Dibenzo (a, h) anthracen 78.3%



ORGANICS ANALYSIS DATA SHEET

PNA's by SW8270D-SIM GC/MS

Page 1 of 1

Sample ID: COMP A-U

MATRIX SPIKE DUPLICATE

Lab Sample ID: OC80A

LIMS ID: 08-32709

Matrix: Sediment

Data Release Authorized: *[Signature]*

Reported: 12/12/08

QC Report No: OC80-Newfields Northwest

Project: MARINA PARK

Event: NA

Date Sampled: 11/26/08

Date Received: 12/05/08

Date Extracted: 12/09/08

Date Analyzed: 12/12/08 12:53

Instrument/Analyst: NT1/YZ

GPC Cleanup: No

Silica Gel Cleanup: Yes

Alumina Cleanup: No

Sample Amount: 10.5 g-dry-wt

Final Extract Volume: 0.5 mL

Dilution Factor: 1.00

Percent Moisture: 15.1%

CAS Number	Analyte	RL	Result
83-32-9	Acenaphthene	4.8	---
86-73-7	Fluorene	4.8	---
85-01-8	Phenanthrene	4.8	---
120-12-7	Anthracene	4.8	---
206-44-0	Fluoranthene	4.8	---
129-00-0	Pyrene	4.8	---
56-55-3	Benzo (a) anthracene	4.8	---
218-01-9	Chrysene	4.8	---
205-99-2	Benzo (b) fluoranthene	4.8	---
50-32-8	Benzo (a) pyrene	4.8	---
193-39-5	Indeno (1,2,3-cd) pyrene	4.8	---
53-70-3	Dibenz (a,h) anthracene	4.8	---
191-24-2	Benzo (g,h,i) perylene	4.8	---

Reported in $\mu\text{g}/\text{kg}$ (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene 63.0%

d14-Dibenzo (a,h) anthracen 79.7%

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Page 1 of 1

Sample ID: MB-120908
METHOD BLANK

Lab Sample ID: MB-120908
LIMS ID: 08-32709
Matrix: Sediment
Data Release Authorized: 
Reported: 12/12/08

QC Report No: OC80-Newfields Northwest
Project: MARINA PARK
Event: NA
Date Sampled: NA
Date Received: NA

Date Extracted: 12/09/08
Date Analyzed: 12/12/08 11:14
Instrument/Analyst: NT1/YZ
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 10.0 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: NA

CAS Number	Analyte	RL	Result
83-32-9	Acenaphthene	5.0	< 5.0 U
86-73-7	Fluorene	5.0	< 5.0 U
85-01-8	Phenanthrene	5.0	< 5.0 U
120-12-7	Anthracene	5.0	< 5.0 U
206-44-0	Fluoranthene	5.0	< 5.0 U
129-00-0	Pyrene	5.0	< 5.0 U
56-55-3	Benzo (a) anthracene	5.0	< 5.0 U
218-01-9	Chrysene	5.0	< 5.0 U
205-99-2	Benzo (b) fluoranthene	5.0	< 5.0 U
50-32-8	Benzo (a) pyrene	5.0	< 5.0 U
193-39-5	Indeno (1,2,3-cd) pyrene	5.0	< 5.0 U
53-70-3	Dibenz (a, h) anthracene	5.0	< 5.0 U
191-24-2	Benzo (g, h, i) perylene	5.0	< 5.0 U

Reported in $\mu\text{g}/\text{kg}$ (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene 58.3%
d14-Dibenzo (a, h) anthracen 81.0%



ORGANICS ANALYSIS DATA SHEET
 PNAs by SW8270D-SIM GC/MS
 Page 1 of 1

Sample ID: LCS-120908
 LAB CONTROL SAMPLE

Lab Sample ID: LCS-120908
 LIMS ID: 08-32709
 Matrix: Sediment
 Data Release Authorized: 
 Reported: 12/12/08

QC Report No: OC80-Newfields Northwest
 Project: MARINA PARK
 Event: NA
 Date Sampled: NA
 Date Received: NA

Date Extracted: 12/09/08
 Date Analyzed LCS: 12/12/08 11:39
 Instrument/Analyst LCS: NT1/YZ

Sample Amount LCS: 10.0 g-dry-wt
 Final Extract Volume LCS: 0.50 mL
 Dilution Factor LCS: 1.00

Analyte	LCS	Spike Added	Recovery
Acenaphthene	90.5	150	60.3%
Fluorene	95.5	150	63.7%
Phenanthrene	97.0	150	64.7%
Anthracene	102	150	68.0%
Fluoranthene	112	150	74.7%
Pyrene	116	150	77.3%
Benzo (a) anthracene	110	150	73.3%
Chrysene	111	150	74.0%
Benzo (b) fluoranthene	104	150	69.3%
Benzo (a) pyrene	114	150	76.0%
Indeno (1,2,3-cd) pyrene	108	150	72.0%
Dibenz (a,h) anthracene	110	150	73.3%
Benzo (g,h,i) perylene	107	150	71.3%

Reported in $\mu\text{g}/\text{kg}$ (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	62.0%
d14-Dibenzo (a,h) anthracen	83.0%

Sample ID: MB-120908
METHOD BLANK

Lab Sample ID: MB-120908
LIMS ID: 08-32709
Matrix: Sediment
Data Release Authorized: *MW*
Reported: 12/16/08

QC Report No: OC80-Newfields Northwest
Project: MARINA PARK
NA
Date Sampled: NA
Date Received: NA

Date Extracted: 12/09/08
Date Analyzed: 12/12/08 18:21
Instrument/Analyst: NT4/PK
GPC Cleanup: No

Sample Amount: 25.0 g
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: NA

CAS Number	Analyte	RL	Result
131-11-3	Dimethylphthalate	20	< 20 U
84-66-2	Diethylphthalate	20	< 20 U
85-68-7	Butylbenzylphthalate	20	< 20 U
117-81-7	bis(2-Ethylhexyl)phthalate	20	< 20 U
117-84-0	Di-n-Octyl phthalate	20	< 20 U

Reported in $\mu\text{g}/\text{kg}$ (ppb)

Semivolatile Surrogate Recovery

d5-Nitrobenzene	49.2%
2-Fluorobiphenyl	60.8%
d14-p-Terphenyl	65.2%
d4-1,2-Dichlorobenzene	58.8%

Sample ID: COMP A-U
SAMPLE

Lab Sample ID: OC80A
LIMS ID: 08-32709
Matrix: Sediment
Data Release Authorized: *MW*
Reported: 12/16/08

QC Report No: OC80-Newfields Northwest
Project: MARINA PARK
NA
Date Sampled: 11/26/08
Date Received: 12/05/08

Date Extracted: 12/09/08
Date Analyzed: 12/12/08 19:28
Instrument/Analyst: NT4/PK
GPC Cleanup: No

Sample Amount: 25.6 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 15.1%

CAS Number	Analyte	RL	Result
131-11-3	Dimethylphthalate	20	< 20 U
84-66-2	Diethylphthalate	20	< 20 U
85-68-7	Butylbenzylphthalate	20	< 20 U
117-81-7	bis(2-Ethylhexyl)phthalate	20	< 20 U
117-84-0	Di-n-Octyl phthalate	20	< 20 U

Reported in $\mu\text{g}/\text{kg}$ (ppb)

Semivolatile Surrogate Recovery

d5-Nitrobenzene	53.6%
2-Fluorobiphenyl	66.4%
d14-p-Terphenyl	66.8%
d4-1,2-Dichlorobenzene	57.6%



ORGANICS ANALYSIS DATA SHEET
 PSDDA Semivolatiles by SW8270 GC/MS
 Page 1 of 1

Sample ID: COMP A-U
 MATRIX SPIKE

Lab Sample ID: OC80A
 LIMS ID: 08-32709
 Matrix: Sediment
 Data Release Authorized: *MW*
 Reported: 12/16/08

QC Report No: OC80-Newfields Northwest
 Project: MARINA PARK
 NA
 Date Sampled: 11/26/08
 Date Received: 12/05/08

Date Extracted: 12/09/08
 Date Analyzed: 12/12/08 20:02
 Instrument/Analyst: NT4/PK
 GPC Cleanup: No

Sample Amount: 25.6 g-dry-wt
 Final Extract Volume: 0.5 mL
 Dilution Factor: 1.00
 Percent Moisture: 15.1%

CAS Number	Analyte	RL	Result
131-11-3	Dimethylphthalate	20	---
84-66-2	Diethylphthalate	20	---
85-68-7	Butylbenzylphthalate	20	---
117-81-7	bis(2-Ethylhexyl)phthalate	20	---
117-84-0	Di-n-Octyl phthalate	20	---

Reported in $\mu\text{g}/\text{kg}$ (ppb)

Semivolatile Surrogate Recovery

d5-Nitrobenzene	65.2%
2-Fluorobiphenyl	72.8%
d14-p-Terphenyl	70.4%
d4-1,2-Dichlorobenzene	64.4%



Sample ID: COMP A-U
MATRIX SPIKE DUPLICATE

Lab Sample ID: OC80A
LIMS ID: 08-32709
Matrix: Sediment
Data Release Authorized: *YMW*
Reported: 12/16/08

QC Report No: OC80-Newfields Northwest
Project: MARINA PARK
NA
Date Sampled: 11/26/08
Date Received: 12/05/08

Date Extracted: 12/09/08
Date Analyzed: 12/12/08 20:36
Instrument/Analyst: NT4/PK
GPC Cleanup: No

Sample Amount: 26.2 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 15.1%

CAS Number	Analyte	RL	Result
131-11-3	Dimethylphthalate	19	---
84-66-2	Diethylphthalate	19	---
85-68-7	Butylbenzylphthalate	19	---
117-81-7	bis(2-Ethylhexyl)phthalate	19	---
117-84-0	Di-n-Octyl phthalate	19	---

Reported in $\mu\text{g}/\text{kg}$ (ppb)

Semivolatile Surrogate Recovery

d5-Nitrobenzene	66.0%
2-Fluorobiphenyl	72.8%
d14-p-Terphenyl	69.6%
d4-1,2-Dichlorobenzene	65.6%

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270 GC/MS
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Sample ID: COMP A-L
SAMPLE

Lab Sample ID: OC80B
LIMS ID: 08-32710
Matrix: Sediment
Data Release Authorized: *MW*
Reported: 12/16/08

QC Report No: OC80-Newfields Northwest
Project: MARINA PARK
NA
Date Sampled: 11/26/08
Date Received: 12/05/08

Date Extracted: 12/09/08
Date Analyzed: 12/12/08 21:10
Instrument/Analyst: NT4/PK
GPC Cleanup: No

Sample Amount: 25.7 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 12.8%

CAS Number	Analyte	RL	Result
131-11-3	Dimethylphthalate	19	< 19 U
84-66-2	Diethylphthalate	19	< 19 U
85-68-7	Butylbenzylphthalate	19	< 19 U
117-81-7	bis(2-Ethylhexyl)phthalate	19	< 19 U
117-84-0	Di-n-Octyl phthalate	19	< 19 U

Reported in $\mu\text{g}/\text{kg}$ (ppb)

Semivolatile Surrogate Recovery

d5-Nitrobenzene	62.0%
2-Fluorobiphenyl	80.4%
d14-p-Terphenyl	69.2%
d4-1,2-Dichlorobenzene	67.2%

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270 GC/MS
Page 1 of 1

Sample ID: COMP B-U
SAMPLE

Lab Sample ID: OC80C
LIMS ID: 08-32711
Matrix: Sediment
Data Release Authorized: *MM*
Reported: 12/16/08

QC Report No: OC80-Newfields Northwest
Project: MARINA PARK
NA
Date Sampled: 11/26/08
Date Received: 12/05/08

Date Extracted: 12/09/08
Date Analyzed: 12/12/08 21:43
Instrument/Analyst: NT4/PK
GPC Cleanup: No

Sample Amount: 25.4 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 13.7%

CAS Number	Analyte	RL	Result
131-11-3	Dimethylphthalate	20	< 20 U
84-66-2	Diethylphthalate	20	< 20 U
85-68-7	Butylbenzylphthalate	20	< 20 U
117-81-7	bis(2-Ethylhexyl)phthalate	20	< 20 U
117-84-0	Di-n-Octyl phthalate	20	< 20 U

Reported in $\mu\text{g}/\text{kg}$ (ppb)

Semivolatile Surrogate Recovery

d5-Nitrobenzene	58.8%
2-Fluorobiphenyl	70.8%
d14-p-Terphenyl	72.4%
d4-1,2-Dichlorobenzene	65.2%



ORGANICS ANALYSIS DATA SHEET
 PSDDA Semivolatiles by SW8270 GC/MS
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Sample ID: COMP B-L
 SAMPLE

Lab Sample ID: OC80D
 LIMS ID: 08-32712
 Matrix: Sediment
 Data Release Authorized: *MMW*
 Reported: 12/16/08

QC Report No: OC80-Newfields Northwest
 Project: MARINA PARK
 NA
 Date Sampled: 11/26/08
 Date Received: 12/05/08

Date Extracted: 12/09/08
 Date Analyzed: 12/12/08 22:17
 Instrument/Analyst: NT4/PK
 GPC Cleanup: No

Sample Amount: 25.5 g-dry-wt
 Final Extract Volume: 0.5 mL
 Dilution Factor: 1.00
 Percent Moisture: 15.7%

CAS Number	Analyte	RL	Result
131-11-3	Dimethylphthalate	20	< 20 U
84-66-2	Diethylphthalate	20	< 20 U
85-68-7	Butylbenzylphthalate	20	< 20 U
117-81-7	bis(2-Ethylhexyl)phthalate	20	< 20 U
117-84-0	Di-n-Octyl phthalate	20	< 20 U

Reported in $\mu\text{g}/\text{kg}$ (ppb)

Semivolatile Surrogate Recovery

d5-Nitrobenzene	62.0%
2-Fluorobiphenyl	68.8%
d14-p-Terphenyl	70.0%
d4-1,2-Dichlorobenzene	65.2%

SW8270 SEMIVOLATILES SOIL/SEDIMENT SURROGATE RECOVERY SUMMARY

Matrix: Sediment

QC Report No: OC80-Newfields Northwest
Project: MARINA PARK

<u>Client ID</u>	<u>NBZ</u>	<u>FBP</u>	<u>TPH</u>	<u>DCB TOT</u>	<u>OUT</u>
MB-120908	49.2%	60.8%	65.2%	58.8%	0
LCS-120908	51.2%	71.6%	70.8%	62.4%	0
COMP A-U	53.6%	66.4%	66.8%	57.6%	0
COMP A-U MS	65.2%	72.8%	70.4%	64.4%	0
COMP A-U MSD	66.0%	72.8%	69.6%	65.6%	0
COMP A-L	62.0%	80.4%	69.2%	67.2%	0
COMP B-U	58.8%	70.8%	72.4%	65.2%	0
COMP B-L	62.0%	68.8%	70.0%	65.2%	0

	<u>LCS/MB LIMITS</u>	<u>QC LIMITS</u>
(NBZ) = d5-Nitrobenzene	(37-85)	(29-87)
(FBP) = 2-Fluorobiphenyl	(39-82)	(32-88)
(TPH) = d14-p-Terphenyl	(38-105)	(21-97)
(DCB) = d4-1,2-Dichlorobenzene	(33-79)	(25-82)

Prep Method: SW3550B
Log Number Range: 08-32709 to 08-32712

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270 GC/MS
Page 1 of 1

Sample ID: COMP A-U
MS/MSD

Lab Sample ID: OC80A
LIMS ID: 08-32709
Matrix: Sediment
Data Release Authorized: *mmw*
Reported: 12/16/08

QC Report No: OC80-Newfields Northwest
Project: MARINA PARK

Date Sampled: 11/26/08
Date Received: 12/05/08

Date Extracted MS/MSD: 12/09/08
Date Analyzed MS: 12/12/08 20:02
MSD: 12/12/08 20:36
Instrument/Analyst MS: NT4/PK
MSD: NT4/PK
GPC Cleanup: NO

Sample Amount MS: 25.6 g-dry-wt
MSD: 26.2 g-dry-wt
Final Extract Volume MS: 0.5 mL
MSD: 0.5 mL
Dilution Factor MS: 1.00
MSD: 1.00
Percent Moisture: 15.1 %

Analyte	Sample	MS	Spike Added-MS	MS Recovery	MSD	Spike Added-MSD	MSD Recovery	RPD
Dimethylphthalate	< 19.6	397	489	81.2%	369	478	77.2%	7.3%
Diethylphthalate	< 19.6	399	489	81.6%	373	478	78.0%	6.7%
Butylbenzylphthalate	< 19.6	356	489	72.8%	336	478	70.3%	5.8%
bis(2-Ethylhexyl)phthalate	< 19.6	412	489	84.3%	381	478	79.7%	7.8%
Di-n-Octyl phthalate	< 19.6	405	489	82.8%	368	478	77.0%	9.6%

Results reported in $\mu\text{g}/\text{kg}$
RPD calculated using sample concentrations per SW846.

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270 GC/MS
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Sample ID: LCS-120908
LAB CONTROL

Lab Sample ID: LCS-120908
LIMS ID: 08-32709
Matrix: Sediment
Data Release Authorized: *mmw*
Reported: 12/16/08

QC Report No: OC80-Newfields Northwest
Project: MARINA PARK

Date Sampled: 11/26/08
Date Received: 12/05/08

Date Extracted: 12/09/08
Date Analyzed: 12/12/08 18:55
Instrument/Analyst: NT4/PK
GPC Cleanup: NO

Sample Amount: 25.0 g
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: NA

Analyte	Lab Control	Spike Added	Recovery
Dimethylphthalate	393	500	78.6%
Diethylphthalate	405	500	81.0%
Butylbenzylphthalate	359	500	71.8%
bis(2-Ethylhexyl)phthalate	385	500	77.0%
Di-n-Octyl phthalate	375	500	75.0%

Semivolatile Surrogate Recovery

d5-Nitrobenzene	51.2%
2-Fluorobiphenyl	71.6%
d14-p-Terphenyl	70.8%
d4-1,2-Dichlorobenzene	62.4%

Results reported in $\mu\text{g}/\text{kg}$

GEOTECHNICAL ANALYSIS DATA SHEET
Moisture Content by Method ASTM D2216



Data Release Authorized: *gp*
Reported: 01/09/09
Date Received: 12/17/08
Page 1 of 1

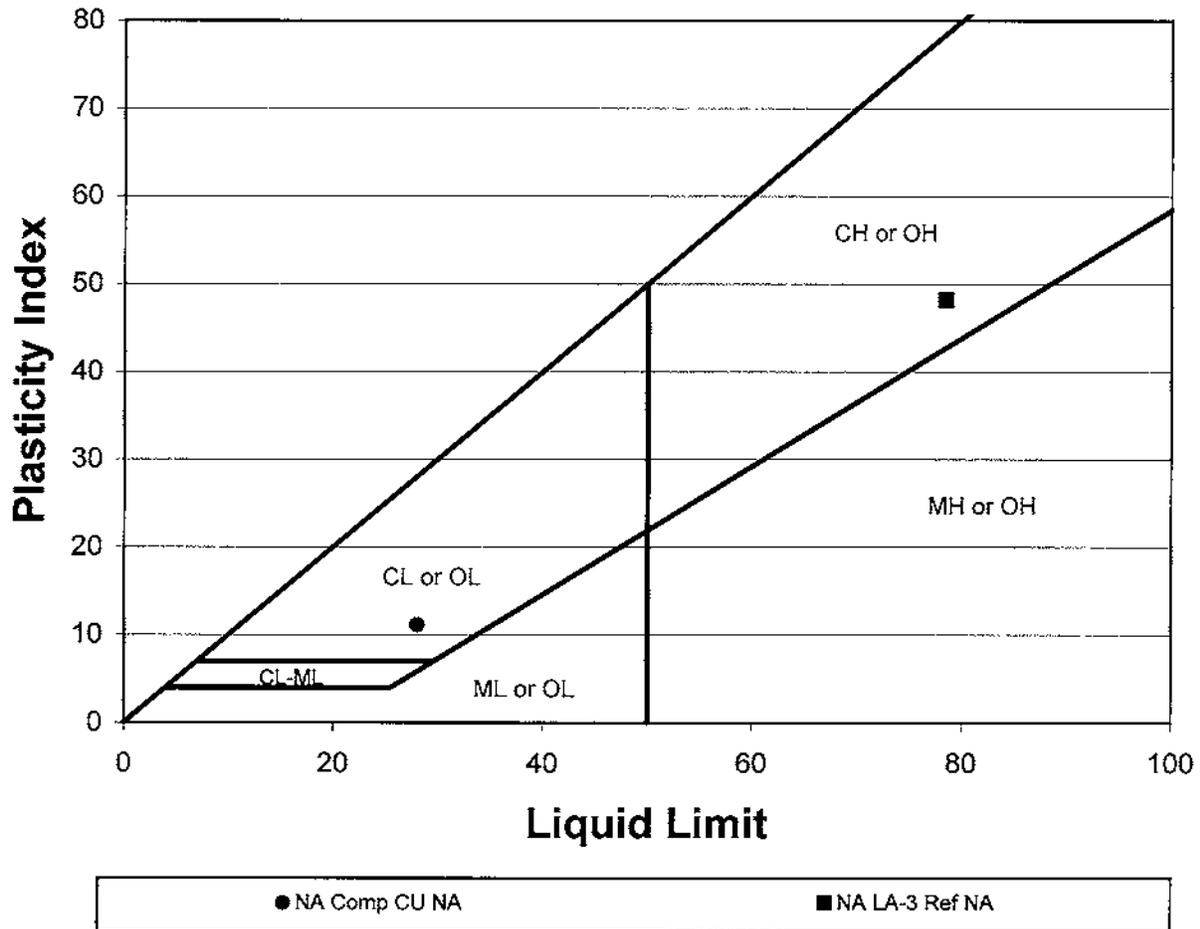
QC Report No: OF06-Newfields Northwest
Project: Marina Park

Client/ ARI ID	Date Sampled	Matrix	Analysis Date	Result
Comp CU OF06A 08-34190	12/08/08	Sediment	01/07/09 12:56	28.86
Comp CL OF06B 08-34191	12/08/08	Sediment	01/07/09 12:56	17.21
LA-3 Ref OF06C 08-34192	12/08/08	Sediment	01/07/09 12:56	111.7

Reported in Percent

Newfields Northwest

Atterberg Limits



Boring Number	Sample Number	Depth (ft)	As-Received Moisture Content	Plasticity Index	Liquid Limit	Plastic Limit	USCS
NA	Comp CU	NA	28.86	11.2	28.0	16.9	CL
NA	Comp CL	NA	17.21	NA	NA	NA	NP
NA	LA-3 Ref	NA	111.70	48.2	78.5	30.3	CH

Analytical Resources, Inc.

SediGraph III V1.04

Unit 1

Serial Number: 399

Page 1

Sample ID: Comp CU
Operator: gs
Client: Newfields Northwest
File: C:\...\OF06\OF06A.SMP
Material/Liquid: Sediment / 0.05% Sodium Metaphosphate (w/w)
Measurement Principle: X-Ray monitored gravity sedimentation
Calculation Method: Stokes sedimentation and Beer's law of extinction

Test Number: 1
Analyzed: 1/9/2009 11:16:09AM
Reported: 1/9/2009 12:42:35PM
Liquid Visc: 0.7230 cp
Analysis Temp: 35.0 °C

Analysis Type: High Speed(Adj)
Run Time: 0:10 hrs:min
Sample Density: 2.650 g/cm³
Liquid Density: 0.9941 g/cm³
Base/Full Scale: 128 / 102 kCnts/s
Reynolds Number: 0.43

Report by Sieve Size

Sieve Name	Aperture Size (µm)	Cumulative Mass Passed (Percent)	Mass Frequency (Percent)	Sieve Name	Aperture Size (µm)	Cumulative Mass Passed (Percent)	Mass Frequency (Percent)
No. 4	4750.0	100.0	0.0	No. 60	250.0	57.2	17.9
No. 10	2000.0	99.1	0.9	No. 120	125.0	36.7	20.5
No. 18	1000.0	92.5	6.6	No. 230	63.0	22.1	14.6
No. 35	500.0	75.1	17.4	No. 635	20.0	20.2	1.9

Analytical Resources, Inc.

SediGraph III V1.04

Unit 1

Serial Number: 399

Page 2

Sample ID: Comp CU
 Operator: gs
 Client: Newfields Northwest
 File: C:\...\AOF06\AOF06A.SMP
 Material/Liquid: Sediment / 0.05% Sodium Metaphosphate (w/w)
 Measurement Principle: X-Ray monitored gravity sedimentation
 Calculation Method: Stokes sedimentation and Beer's law of extinction

Test Number: 1
 Analyzed: 1/9/2009 11:16:09AM
 Reported: 1/9/2009 12:42:35PM
 Liquid Visc: 0.7230 cp
 Analysis Temp: 35.0 °C

Analysis Type: High Speed(Adj)
 Run Time: 0:10 hrs:min
 Sample Density: 2.650 g/cm³
 Liquid Density: 0.9941 g/cm³
 Base/Full Scale: 128 / 102 kCnts/s
 Reynolds Number: 0.43

Report by Size Table

High Diameter (µm)	Cumulative Mass Finer (Percent)	Mass Frequency (Percent)	High Diameter (µm)	Cumulative Mass Finer (Percent)	Mass Frequency (Percent)
300.0	57.2	4.7	15.00	18.3	1.1
250.0	50.9	6.3	10.00	17.5	0.8
200.0	42.1	8.8	8.000	16.5	1.1
150.0	30.3	11.8	6.000	15.7	0.7
100.0	24.9	5.4	5.000	14.6	1.1
80.00	22.0	2.8	4.000	13.3	1.2
60.00	21.7	0.3	3.000	11.6	1.7
50.00	21.5	0.3	2.000	10.5	1.1
40.00	21.0	0.5	1.500	8.8	1.6
30.00	20.6	0.3	1.000	8.0	0.9
25.00	20.2	0.5	0.800	6.8	1.2
20.00	19.5	0.7	0.600	6.1	0.7

Analytical Resources, Inc.

SediGraph III V1.04

Unit 1

Serial Number: 399

Page 3

Sample ID: Comp CU
Operator: gs
Client: Newfields Northwest
File: C:\...\OF06\OF06A.SMP
Material/Liquid: Sediment / 0.05% Sodium Metaphosphate (w/w)
Measurement Principle: X-Ray monitored gravity sedimentation
Calculation Method: Stokes sedimentation and Beer's law of extinction

Test Number: 1
Analyzed: 1/9/2009 11:16:09AM
Reported: 1/9/2009 12:42:35PM
Liquid Visc: 0.7230 cp
Analysis Temp: 35.0 °C

Analysis Type: High Speed(Adj)
Run Time: 0:10 hrs:min
Sample Density: 2.650 g/cm³
Liquid Density: 0.9941 g/cm³
Base/Full Scale: 128 / 102 kCnts/s
Reynolds Number: 0.43

Report by Mass Percent

High Diameter (µm)	Cumulative Mass Finer (Percent)	Mass Frequency (Percent)	High Diameter (µm)	Cumulative Mass Finer (Percent)	Mass Frequency (Percent)
4750	100.0	0.0	230.5	50.0	5.0
4750	95.0	5.0	194.2	45.0	5.0
1130	90.0	5.0	165.0	40.0	5.0
901.6	85.0	5.0	140.0	35.0	5.0
737.0	80.0	5.0	117.8	30.0	5.0
605.2	75.0	5.0	98.94	25.0	5.0
498.1	70.0	5.0	80.58	20.0	5.0
410.0	65.0	5.0	18.64	15.0	5.0
337.6	60.0	5.0	4.341	10.0	5.0
278.4	55.0	5.0	1.334	5.0	5.0

Analytical Resources, Inc.

SediGraph III V1.04

Unit 1

Serial Number: 399

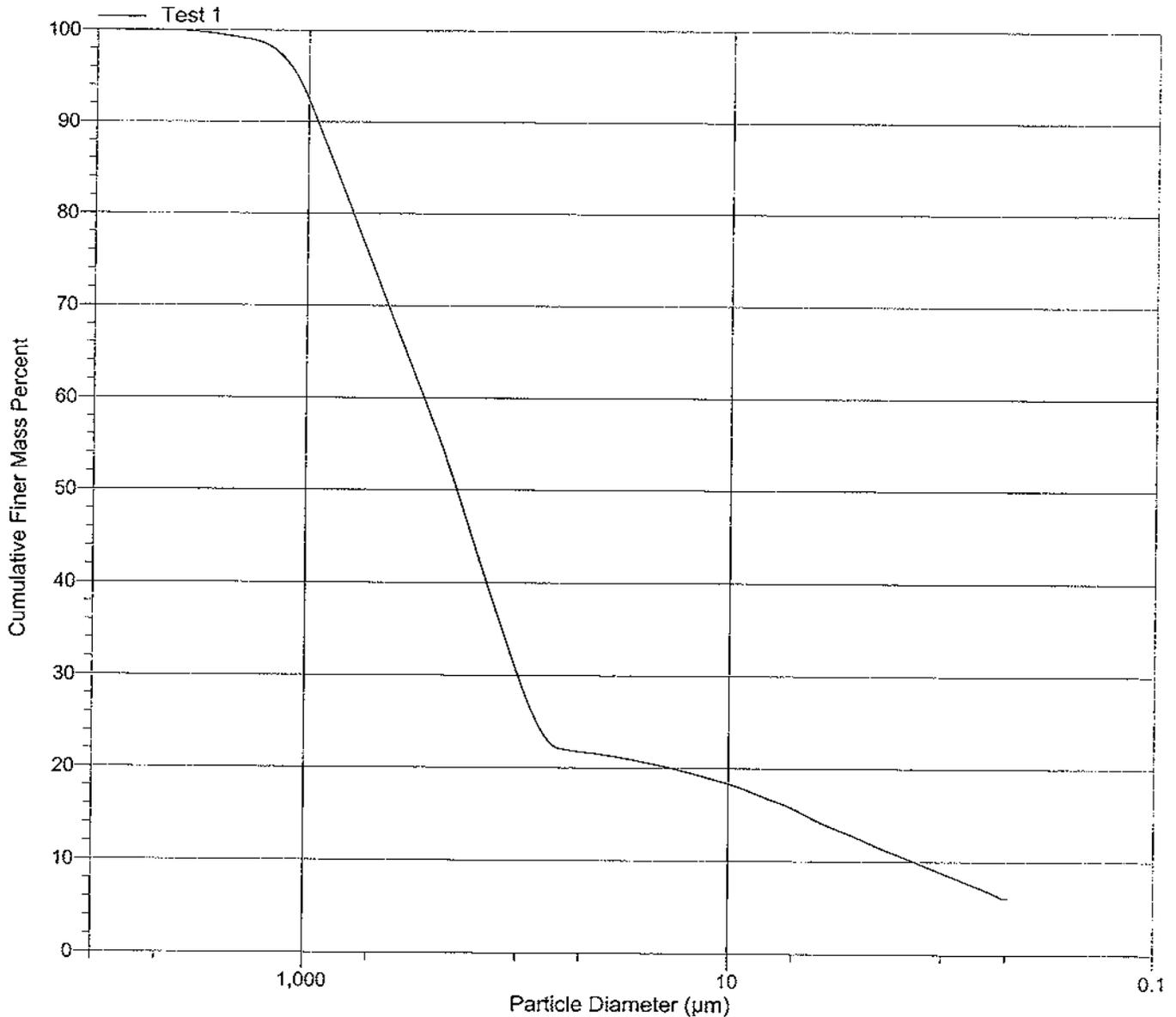
Page 4

Sample ID: Comp CU
Operator: gs
Client: Newfields Northwest
File: C:\...\AOF06\AOF06A.SMP
Material/Liquid: Sediment / 0.05% Sodium Metaphosphate (w/w)
Measurement Principle: X-Ray monitored gravity sedimentation
Calculation Method: Stokes sedimentation and Beer's law of extinction

Test Number: 1
Analyzed: 1/9/2009 11:16:09AM
Reported: 1/9/2009 12:42:35PM
Liquid Visc: 0.7230 cp
Analysis Temp: 35.0 °C

Analysis Type: High Speed(Adj)
Run Time: 0:10 hrs:min
Sample Density: 2.650 g/cm³
Liquid Density: 0.9941 g/cm³
Base/Full Scale: 128 / 102 kCnts/s
Reynolds Number: 0.43

Cumulative Finer Mass Percent vs. Diameter



Analytical Resources, Inc.

SediGraph III V1.04

Unit 1

Serial Number: 399

Page 1

Sample ID: Comp CL
Operator: gs
Client: Newfields Northwest
File: C:\...OF06\OF06B.SMP
Material/Liquid: Sediment / Water
Measurement Principle: X-Ray monitored gravity sedimentation
Calculation Method: Stokes sedimentation and Beer's law of extinction

Test Number: 1
Analyzed: 1/9/2009 11:47:07AM
Reported: 1/9/2009 12:46:53PM
Liquid Visc: 0.7230 cp
Analysis Temp: 35.0 °C
Analysis Type: High Speed(Adj)
Run Time: 0:05 hrs:min
Sample Density: 2.650 g/cm³
Liquid Density: 0.9941 g/cm³
Base/Full Scale: 128 / 107 kCnts/s
Reynolds Number: 0.30

Report by Sieve Size

Sieve Name	Aperture Size (µm)	Cumulative Mass Passed (Percent)	Mass Frequency (Percent)	Sieve Name	Aperture Size (µm)	Cumulative Mass Passed (Percent)	Mass Frequency (Percent)
5/8 in.	16000.0	100.0	0.0	No. 60	250.0	7.1	23.2
No. 4	4750.0	96.3	3.7	No. 120	125.0	2.4	4.7
No. 10	2000.0	86.6	9.7	No. 230	63.0	0.8	1.6
No. 18	1000.0	65.1	21.5	No. 635	20.0	0.7	0.1
No. 35	500.0	30.3	34.8				

Analytical Resources, Inc.

SediGraph III V1.04

Unit 1

Serial Number: 399

Page 2

Sample ID: Comp CL
Operator: gs
Client: Newfields Northwest
File: C:\... \OF06\OF06B.SMP
Material/Liquid: Sediment / Water
Measurement Principle: X-Ray monitored gravity sedimentation
Calculation Method: Stokes sedimentation and Beer's law of extinction

Test Number: 1
Analyzed: 1/9/2009 11:47:07AM
Reported: 1/9/2009 12:46:53PM
Liquid Visc: 0.7230 cp
Analysis Temp: 35.0 °C

Analysis Type: High Speed(Adj)
Run Time: 0:05 hrs:min
Sample Density: 2.650 g/cm³
Liquid Density: 0.9941 g/cm³
Base/Full Scale: 128 / 107 kCnts/s
Reynolds Number: 0.30

Report by Size Table

High Diameter (µm)	Cumulative Mass Finer (Percent)	Mass Frequency (Percent)	High Diameter (µm)	Cumulative Mass Finer (Percent)	Mass Frequency (Percent)
300.0	7.1	3.7	20.00	0.7	0.0
250.0	4.8	2.3	15.00	0.7	0.0
200.0	3.0	1.8	10.00	0.7	0.0
150.0	1.7	1.3	8.000	0.7	0.0
100.0	1.1	0.6	6.000	0.7	0.0
80.00	0.8	0.3	5.000	0.6	0.0
60.00	0.8	0.0	4.000	0.6	0.0
50.00	0.8	0.0	3.000	0.5	0.0
40.00	0.8	0.0	2.000	0.5	0.0
30.00	0.8	0.0	1.500	0.5	0.0
25.00	0.7	0.0			

Analytical Resources, Inc.

SediGraph III V1.04

Unit 1

Serial Number: 399

Page 3

Sample ID: Comp CL
 Operator: gs
 Client: Newfields Northwest
 File: C:\...\AOF06\AOF06B.SMP
 Material/Liquid: Sediment / Water
 Measurement Principle: X-Ray monitored gravity sedimentation
 Calculation Method: Stokes sedimentation and Beer's law of extinction

Test Number: 1	Analysis Type: High Speed(Adj)
Analyzed: 1/9/2009 11:47:07AM	Run Time: 0:05 hrs:min
Reported: 1/9/2009 12:46:53PM	Sample Density: 2.650 g/cm ³
Liquid Visc: 0.7230 cp	Liquid Density: 0.9941 g/cm ³
Analysis Temp: 35.0 °C	Base/Full Scale: 128 / 107 kCnts/s
	Reynolds Number: 0.30

Report by Mass Percent

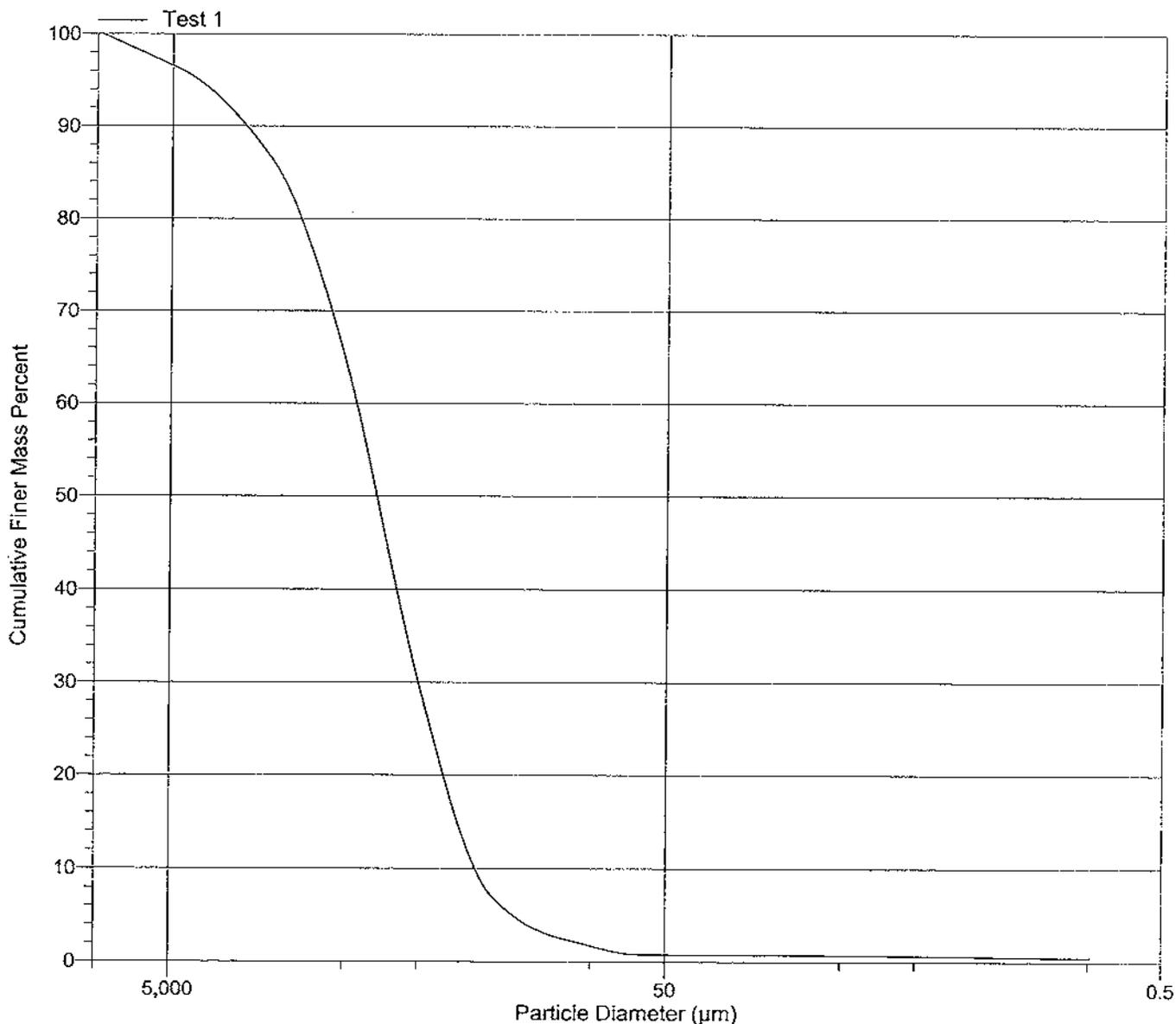
High Diameter (µm)	Cumulative Mass Finer (Percent)	Mass Frequency (Percent)	High Diameter (µm)	Cumulative Mass Finer (Percent)	Mass Frequency (Percent)
9500	100.0	0.0	808.4	50.0	5.0
9500	95.0	5.0	735.7	45.0	5.0
3928	90.0	5.0	670.8	40.0	5.0
2514	85.0	5.0	610.8	35.0	5.0
1833	80.0	5.0	553.5	30.0	5.0
1505	75.0	5.0	496.5	25.0	5.0
1292	70.0	5.0	442.2	20.0	5.0
1129	65.0	5.0	392.1	15.0	5.0
997.6	60.0	5.0	343.5	10.0	5.0
892.9	55.0	5.0	291.3	5.0	5.0

Sample ID: Comp CL
Operator: gs
Client: Newfields Northwest
File: C:\...\OF06\OF06B.SMP
Material/Liquid: Sediment / Water
Measurement Principle: X-Ray monitored gravity sedimentation
Calculation Method: Stokes sedimentation and Beer's law of extinction

Test Number: 1
Analyzed: 1/9/2009 11:47:07AM
Reported: 1/9/2009 12:46:53PM
Liquid Visc: 0.7230 cp
Analysis Temp: 35.0 °C

Analysis Type: High Speed(Adj)
Run Time: 0:05 hrs:min
Sample Density: 2.650 g/cm³
Liquid Density: 0.9941 g/cm³
Base/Full Scale: 128 / 107 kCnts/s
Reynolds Number: 0.30

Cumulative Finer Mass Percent vs. Diameter



Analytical Resources, Inc.

SediGraph III V1.04

Unit 1

Serial Number: 399

Page 1

Sample ID: LA-3 Ref
Operator: gs
Client: Newfields Northwest
File: C:\... \OF06\OF06C.SMP
Material/Liquid: Sediment / Water
Measurement Principle: X-Ray monitored gravity sedimentation
Calculation Method: Stokes sedimentation and Beer's law of extinction

Test Number: 1
Analyzed: 1/9/2009 12:52:45PM
Reported: 1/9/2009 1:03:57PM
Liquid Visc: 0.7228 cp
Analysis Temp: 35.0 °C

Analysis Type: High Speed(Adj)
Run Time: 0:05 hrs:min
Sample Density: 2.650 g/cm³
Liquid Density: 0.9941 g/cm³
Base/Full Scale: 128 / 77 kCnts/s
Reynolds Number: 0.30

Report by Sieve Size

Sieve Name	Aperture Size (µm)	Cumulative Mass Passed (Percent)	Mass Frequency (Percent)	Sieve Name	Aperture Size (µm)	Cumulative Mass Passed (Percent)	Mass Frequency (Percent)
No. 4	4750.0	100.0	0.0	No. 60	250.0	99.2	0.4
No. 10	2000.0	99.9	0.1	No. 120	125.0	97.8	1.4
No. 18	1000.0	99.8	0.1	No. 230	63.0	92.1	5.7
No. 35	500.0	99.6	0.2	No. 635	20.0	63.4	28.7

Analytical Resources, Inc.

SediGraph III V1.04

Unit 1

Serial Number: 399

Page 2

Sample ID: LA-3 Ref
Operator: gs
Client: Newfields Northwest
File: C:\...AOF06\OFO6C.SMP
Material/Liquid: Sediment / Water
Measurement Principle: X-Ray monitored gravity sedimentation
Calculation Method: Stokes sedimentation and Beer's law of extinction

Test Number: 1
Analyzed: 1/9/2009 12:52:45PM
Reported: 1/9/2009 1:03:57PM
Liquid Visc: 0.7228 cp
Analysis Temp: 35.0 °C

Analysis Type: High Speed(Adj)
Run Time: 0:05 hrs:min
Sample Density: 2.650 g/cm³
Liquid Density: 0.9941 g/cm³
Base/Full Scale: 128 / 77 kCnts/s
Reynolds Number: 0.30

Report by Size Table

High Diameter (µm)	Cumulative Mass Finer (Percent)	Mass Frequency (Percent)	High Diameter (µm)	Cumulative Mass Finer (Percent)	Mass Frequency (Percent)
300.0	99.2	0.1	20.00	55.4	8.0
250.0	98.9	0.3	15.00	46.1	9.3
200.0	98.3	0.6	10.00	41.8	4.3
150.0	96.2	2.1	8.000	37.8	4.0
100.0	93.7	2.5	6.000	35.5	2.3
80.00	92.1	1.6	5.000	32.8	2.7
60.00	91.5	0.6	4.000	29.6	3.3
50.00	87.6	3.9	3.000	25.9	3.7
40.00	77.3	10.2	2.000	23.8	2.0
30.00	70.7	6.6	1.500	19.5	4.3
25.00	63.4	7.3			

Analytical Resources, Inc.

SediGraph III V1.04

Unit 1

Serial Number: 399

Page 3

Sample ID: LA-3 Ref
 Operator: gs
 Client: Newfields Northwest
 File: C:\...OF06\OF06C.SMP
 Material/Liquid: Sediment / Water
 Measurement Principle: X-Ray monitored gravity sedimentation
 Calculation Method: Stokes sedimentation and Beer's law of extinction

Test Number: 1
 Analyzed: 1/9/2009 12:52:45PM
 Reported: 1/9/2009 1:03:57PM
 Liquid Visc: 0.7228 cp
 Analysis Temp: 35.0 °C

Analysis Type: High Speed(Adj)
 Run Time: 0:05 hrs:min
 Sample Density: 2.650 g/cm³
 Liquid Density: 0.9941 g/cm³
 Base/Full Scale: 128 / 77 kCnts/s
 Reynolds Number: 0.30

Report by Mass Percent

High Diameter (µm)	Cumulative Mass Finer (Percent)	Mass Frequency (Percent)	High Diameter (µm)	Cumulative Mass Finer (Percent)	Mass Frequency (Percent)
4750	100.0	0.0	17.77	55.0	5.0
4750	95.0	5.0	14.78	50.0	5.0
89.92	90.0	5.0	12.03	45.0	5.0
44.37	85.0	5.0	9.490	40.0	5.0
36.87	80.0	5.0	7.113	35.0	5.0
32.19	75.0	5.0	4.806	30.0	5.0
28.18	70.0	5.0	3.130	25.0	5.0
24.51	65.0	5.0	1.786	20.0	5.0
21.07	60.0	5.0	1.069	15.0	5.0

Analytical Resources, Inc.

SediGraph III V1.04

Unit 1

Serial Number: 399

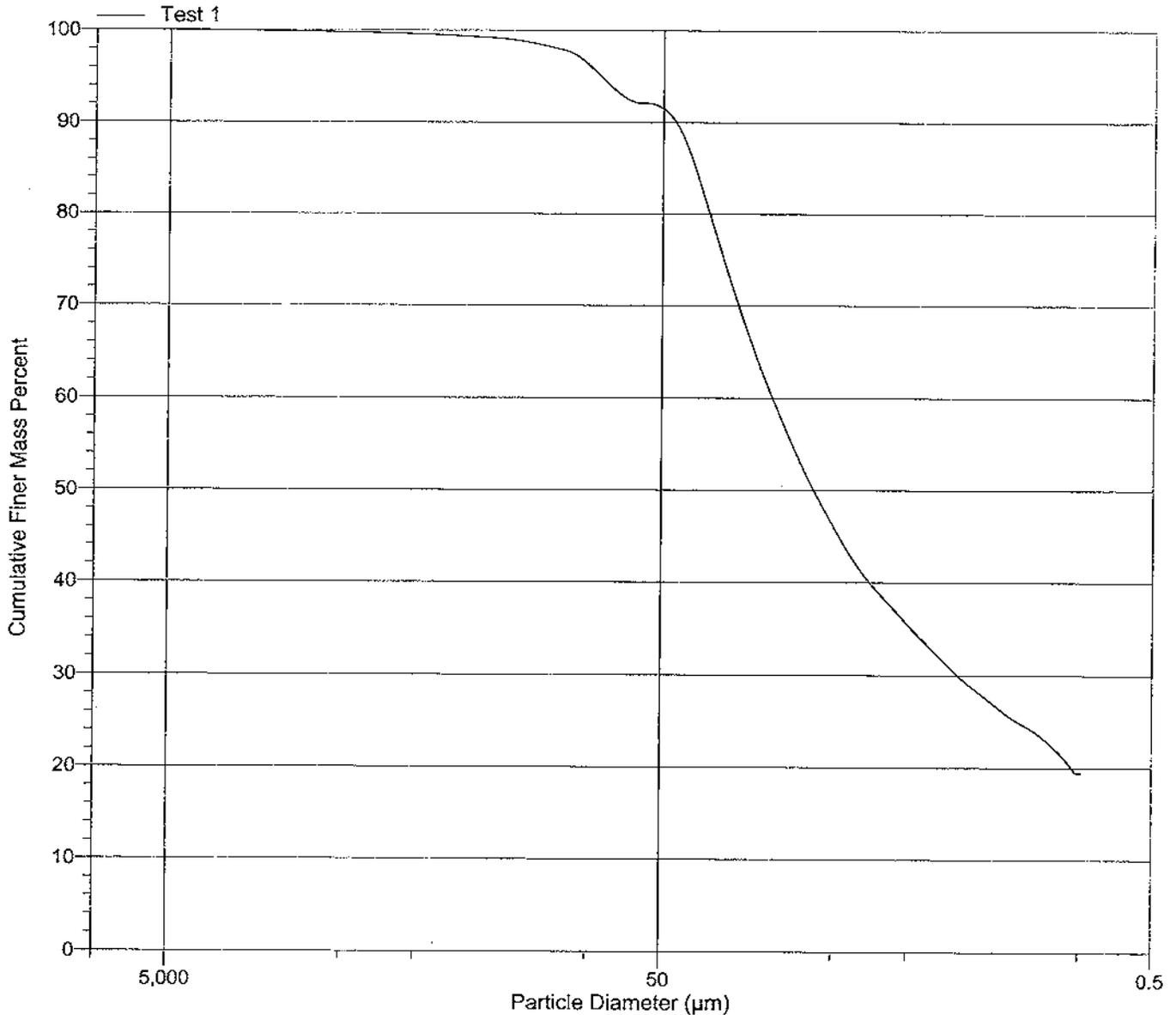
Page 4

Sample ID: LA-3 Ref
Operator: gs
Client: Newfields Northwest
File: C:\...OF06\OF06C.SMP
Material/Liquid: Sediment / Water
Measurement Principle: X-Ray monitored gravity sedimentation
Calculation Method: Stokes sedimentation and Beer's law of extinction

Test Number: 1
Analyzed: 1/9/2009 12:52:45PM
Reported: 1/9/2009 1:03:57PM
Liquid Visc: 0.7228 cp
Analysis Temp: 35.0 °C

Analysis Type: High Speed(Adj)
Run Time: 0:05 hrs:min
Sample Density: 2.650 g/cm³
Liquid Density: 0.9941 g/cm³
Base/Full Scale: 128 / 77 kCnts/s
Reynolds Number: 0.30

Cumulative Finer Mass Percent vs. Diameter



Analytical Resources, Inc.

SediGraph III V1.04

Unit 1

Serial Number: 399

Page 1

Sample ID: MP-10U
 Operator: BR
 Client: Newfields Northwest
 File: C:\...\OF06\OF06D.SMP
 Material/Liquid: Sediment / Water
 Measurement Principle: X-Ray monitored gravity sedimentation
 Calculation Method: Stokes sedimentation and Beer's law of extinction

Test Number: 1	Analysis Type: High Speed(Adj)
Analyzed: 1/12/2009 1:47:47PM	Run Time: 0:05 hrs:min
Reported: 1/13/2009 11:39:07AM	Sample Density: 2.650 g/cm ³
Liquid Visc: 0.7228 cp	Liquid Density: 0.9941 g/cm ³
Analysis Temp: 35.0 °C	Base/Full Scale: 128 / 75 kCnts/s
	Reynolds Number: 0.30

Report by Sieve Size

Sieve Name	Aperture Size (µm)	Cumulative Mass Passed (Percent)	Mass Frequency (Percent)	Sieve Name	Aperture Size (µm)	Cumulative Mass Passed (Percent)	Mass Frequency (Percent)
5/8 in.	16000.0	100.0	0.0	No. 60	250.0	8.8	27.8
No. 4	4750.0	99.2	0.8	No. 120	125.0	4.0	4.8
No. 10	2000.0	96.6	2.6	No. 230	63.0	2.5	1.5
No. 18	1000.0	84.4	12.2	No. 635	20.0	2.2	0.3
No. 35	500.0	36.6	47.8				

Analytical Resources, Inc.

SediGraph III V1.04

Unit 1

Serial Number: 399

Page 2

Sample ID: MP-10U
Operator: BR
Client: Newfields Northwest
File: C:\...\AOF06\AOF06D.SMP
Material/Liquid: Sediment / Water
Measurement Principle: X-Ray monitored gravity sedimentation
Calculation Method: Stokes sedimentation and Beer's law of extinction

Test Number: 1
Analyzed: 1/12/2009 1:47:47PM
Reported: 1/13/2009 11:39:07AM
Liquid Visc: 0.7228 cp
Analysis Temp: 35.0 °C
Analysis Type: High Speed(Adj)
Run Time: 0:05 hrs:min
Sample Density: 2.650 g/cm³
Liquid Density: 0.9941 g/cm³
Base/Full Scale: 128 / 75 kCnts/s
Reynolds Number: 0.30

Report by Size Table

High Diameter (µm)	Cumulative Mass Finer (Percent)	Mass Frequency (Percent)	High Diameter (µm)	Cumulative Mass Finer (Percent)	Mass Frequency (Percent)
300.0	8.8	4.1	20.00	2.1	0.1
250.0	6.6	2.2	15.00	1.8	0.2
200.0	4.7	1.9	10.00	1.5	0.3
150.0	3.4	1.3	8.000	1.0	0.5
100.0	2.8	0.6	6.000	0.9	0.1
80.00	2.5	0.3	5.000	0.9	0.0
60.00	2.5	0.0	4.000	0.9	0.0
50.00	2.4	0.1	3.000	0.8	0.0
40.00	2.3	0.1	2.000	0.8	0.0
30.00	2.3	0.1	1.500	0.9	-0.1
25.00	2.2	0.1			

Analytical Resources, Inc.

SediGraph III V1.04

Unit 1

Serial Number: 399

Page 3

Sample ID: MP-10U
Operator: BR
Client: Newfields Northwest
File: C:\...\OF06\OF06D.SMP
Material/Liquid: Sediment / Water
Measurement Principle: X-Ray monitored gravity sedimentation
Calculation Method: Stokes sedimentation and Beer's law of extinction

Test Number: 1
Analyzed: 1/12/2009 1:47:47PM
Reported: 1/13/2009 11:39:07AM
Liquid Visc: 0.7228 cp
Analysis Temp: 35.0 °C
Analysis Type: High Speed(Adj)
Run Time: 0:05 hrs:min
Sample Density: 2.650 g/cm³
Liquid Density: 0.9941 g/cm³
Base/Full Scale: 128 / 75 kCnts/s
Reynolds Number: 0.30

Report by Mass Percent

High Diameter (µm)	Cumulative Mass Finer (Percent)	Mass Frequency (Percent)	High Diameter (µm)	Cumulative Mass Finer (Percent)	Mass Frequency (Percent)
9500	100.0	0.0	649.8	50.0	5.0
9500	95.0	5.0	610.6	45.0	5.0
1606	90.0	5.0	571.5	40.0	5.0
1209	85.0	5.0	530.7	35.0	5.0
1018	80.0	5.0	484.8	30.0	5.0
908.3	75.0	5.0	440.3	25.0	5.0
838.4	70.0	5.0	399.2	20.0	5.0
782.5	65.0	5.0	359.5	15.0	5.0
734.3	60.0	5.0	318.8	10.0	5.0
690.6	55.0	5.0	269.1	5.0	5.0

Analytical Resources, Inc.

SediGraph III V1.04

Unit 1

Serial Number: 399

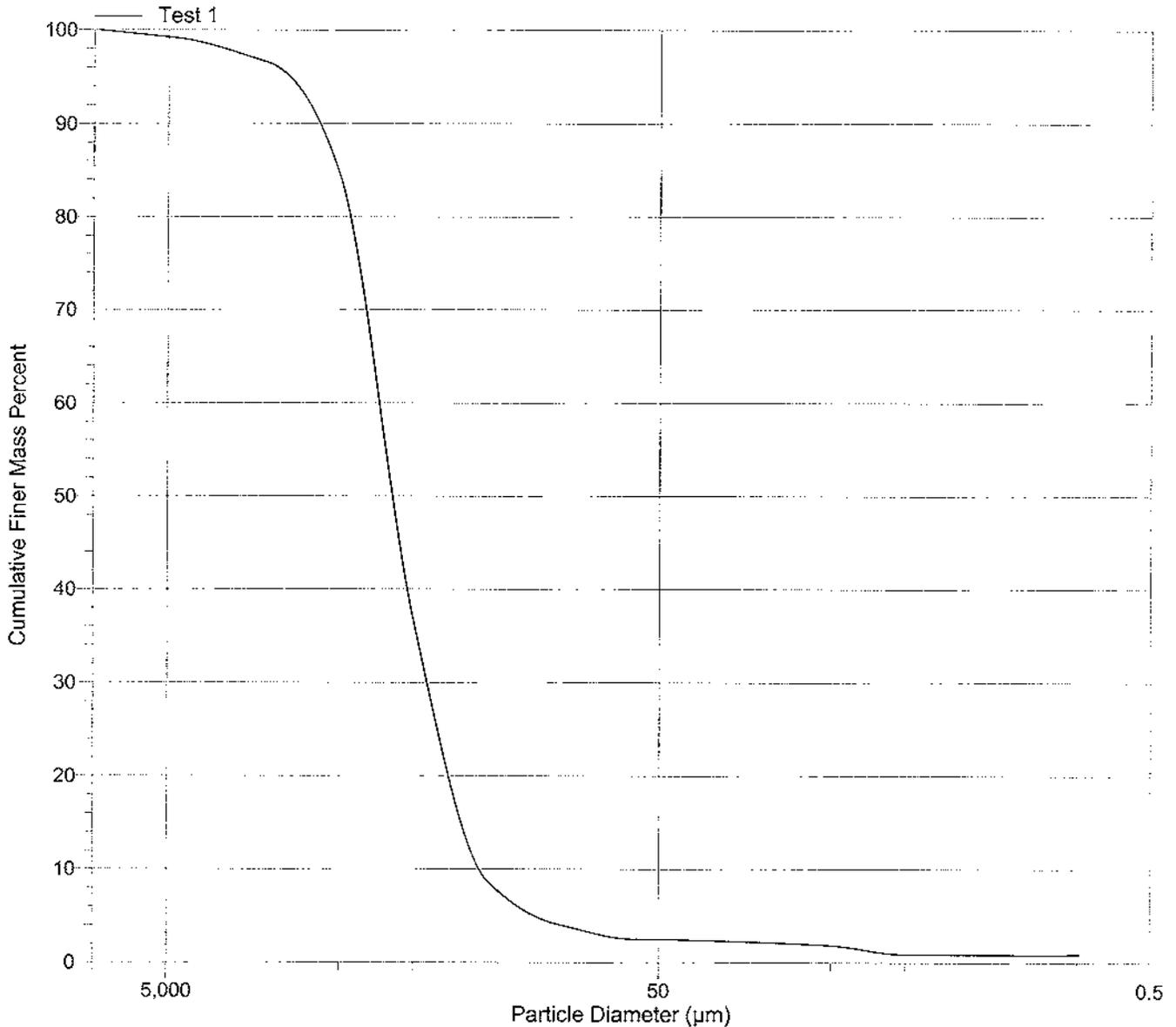
Page 4

Sample ID: MP-10U
Operator: BR
Client: Newfields Northwest
File: C:\...\OF06\OF06D.SMP
Material/Liquid: Sediment / Water
Measurement Principle: X-Ray monitored gravity sedimentation
Calculation Method: Stokes sedimentation and Beer's law of extinction

Test Number: 1
Analyzed: 1/12/2009 1:47:47PM
Reported: 1/13/2009 11:39:07AM
Liquid Visc: 0.7228 cp
Analysis Temp: 35.0 °C

Analysis Type: High Speed(Adj)
Run Time: 0:05 hrs:min
Sample Density: 2.650 g/cm³
Liquid Density: 0.9941 g/cm³
Base/Full Scale: 128 / 75 kCnts/s
Reynolds Number: 0.30

Cumulative Finer Mass Percent vs. Diameter



Analytical Resources, Inc.

SediGraph III V1.04

Unit 1

Serial Number: 399

Page 1

Sample ID: MP-10L

Operator: BR

Client: Newfields Northwest

File: C:\...\OF06\OF06E.SMP

Material/Liquid: Sediment / Water

Measurement Principle: X-Ray monitored gravity sedimentation

Calculation Method: Stokes sedimentation and Beer's law of extinction

Test Number: 1

Analyzed: 1/9/2009 4:51:53PM

Reported: 1/13/2009 11:43:25AM

Liquid Visc: 0.7228 cp

Analysis Temp: 35.0 °C

Analysis Type: High Speed(Adj)

Run Time: 0:05 hrs:min

Sample Density: 2.650 g/cm³

Liquid Density: 0.9941 g/cm³

Base/Full Scale: 128 / 88 kCnts/s

Reynolds Number: 0.30

Report by Sieve Size

Sieve Name	Aperture Size (µm)	Cumulative Mass Passed (Percent)	Mass Frequency (Percent)	Sieve Name	Aperture Size (µm)	Cumulative Mass Passed (Percent)	Mass Frequency (Percent)
No. 4	4750.0	100.0	0.0	No. 60	250.0	89.6	7.5
No. 10	2000.0	99.8	0.2	No. 120	125.0	54.6	35.0
No. 18	1000.0	99.2	0.6	No. 230	63.0	34.5	20.1
No. 35	500.0	97.1	2.1	No. 635	20.0	32.6	1.9

Analytical Resources, Inc.

SediGraph III V1.04

Unit 1

Serial Number: 399

Page 2

Sample ID: MP-10L
 Operator: BR
 Client: Newfields Northwest
 File: C:\...\AOF06\OF06E.SMP
 Material/Liquid: Sediment / Water
 Measurement Principle: X-Ray monitored gravity sedimentation
 Calculation Method: Stokes sedimentation and Beer's law of extinction

Test Number: 1	Analysis Type: High Speed(Adj)
Analyzed: 1/9/2009 4:51:53PM	Run Time: 0:05 hrs:min
Reported: 1/13/2009 11:43:25AM	Sample Density: 2.650 g/cm ³
Liquid Visc: 0.7228 cp	Liquid Density: 0.9941 g/cm ³
Analysis Temp: 35.0 °C	Base/Full Scale: 128 / 88 kCnts/s
	Reynolds Number: 0.30

Report by Size Table

High Diameter (µm)	Cumulative Mass Finer (Percent)	Mass Frequency (Percent)	High Diameter (µm)	Cumulative Mass Finer (Percent)	Mass Frequency (Percent)
300.0	89.6	3.3	20.00	31.6	1.0
250.0	80.7	8.9	15.00	29.8	1.8
200.0	63.6	17.1	10.00	28.3	1.5
150.0	45.8	17.9	8.000	26.4	1.9
100.0	38.2	7.6	6.000	25.1	1.3
80.00	34.5	3.7	5.000	23.4	1.7
60.00	34.3	0.2	4.000	21.1	2.2
50.00	34.0	0.3	3.000	18.4	2.7
40.00	33.5	0.5	2.000	16.6	1.8
30.00	33.0	0.4	1.500	15.0	1.6
25.00	32.6	0.5			

Analytical Resources, Inc.

SediGraph III V1.04

Unit 1

Serial Number: 399

Page 3

Sample ID: MP-10L
Operator: BR
Client: Newfields Northwest
File: C:\...\AOF06\OF06E.SMP
Material/Liquid: Sediment / Water
Measurement Principle: X-Ray monitored gravity sedimentation
Calculation Method: Stokes sedimentation and Beer's law of extinction

Test Number: 1
Analyzed: 1/9/2009 4:51:53PM
Reported: 1/13/2009 11:43:25AM
Liquid Visc: 0.7228 cp
Analysis Temp: 35.0 °C
Analysis Type: High Speed(Adj)
Run Time: 0:05 hrs:min
Sample Density: 2.650 g/cm³
Liquid Density: 0.9941 g/cm³
Base/Full Scale: 128 / 88 kCnts/s
Reynolds Number: 0.30

Report by Mass Percent

High Diameter (µm)	Cumulative Mass Finer (Percent)	Mass Frequency (Percent)	High Diameter (µm)	Cumulative Mass Finer (Percent)	Mass Frequency (Percent)
4750	100.0	0.0	126.3	50.0	5.0
4750	95.0	5.0	111.3	45.0	5.0
356.6	90.0	5.0	98.06	40.0	5.0
254.8	85.0	5.0	85.15	35.0	5.0
218.1	80.0	5.0	68.19	30.0	5.0
197.4	75.0	5.0	10.29	25.0	5.0
181.0	70.0	5.0	4.924	20.0	5.0
166.8	65.0	5.0	2.543	15.0	5.0
153.6	60.0	5.0	1.115	10.0	5.0
140.5	55.0	5.0			

Analytical Resources, Inc.

SediGraph III V1.04

Unit 1

Serial Number: 399

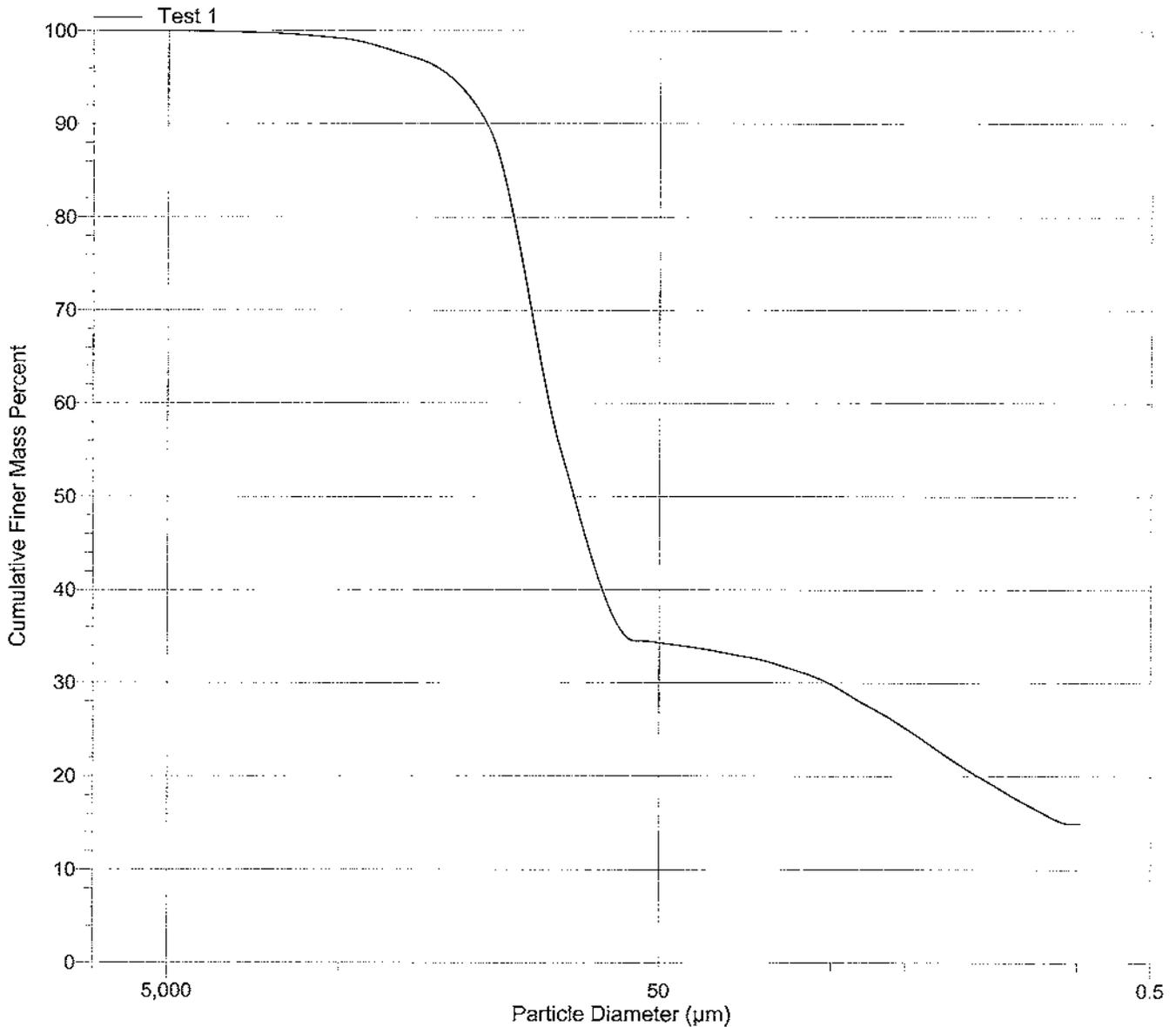
Page 4

Sample ID: MP-10L
Operator: BR
Client: Newfields Northwest
File: C:\...\OF06\OF06E.SMP
Material/Liquid: Sediment / Water
Measurement Principle: X-Ray monitored gravity sedimentation
Calculation Method: Stokes sedimentation and Beer's law of extinction

Test Number: 1
Analyzed: 1/9/2009 4:51:53PM
Reported: 1/13/2009 11:43:25AM
Liquid Visc: 0.7228 cp
Analysis Temp: 35.0 °C

Analysis Type: High Speed(Adj)
Run Time: 0:05 hrs:min
Sample Density: 2.650 g/cm³
Liquid Density: 0.9941 g/cm³
Base/Full Scale: 128 / 88 kCnts/s
Reynolds Number: 0.30

Cumulative Finer Mass Percent vs. Diameter



Analytical Resources, Inc.

SediGraph III V1.04

Unit 1

Serial Number: 399

Page 1

Sample ID: MP-12U
 Operator: BR
 Client: Newfields Northwest
 File: C:\...\AOF06\OF06F.SMP
 Material/Liquid: Sediment / Water
 Measurement Principle: X-Ray monitored gravity sedimentation
 Calculation Method: Stokes sedimentation and Beer's law of extinction

Test Number: 1	Analysis Type: High Speed(Adj)
Analyzed: 1/12/2009 1:11:12PM	Run Time: 0:05 hrs:min
Reported: 1/13/2009 11:44:41AM	Sample Density: 2.650 g/cm ³
Liquid Visc: 0.7229 cp	Liquid Density: 0.9941 g/cm ³
Analysis Temp: 35.0 °C	Base/Full Scale: 128 / 87 kCnts/s
	Reynolds Number: 0.30

Report by Sieve Size

Sieve Name	Aperture Size (µm)	Cumulative Mass Passed (Percent)	Mass Frequency (Percent)	Sieve Name	Aperture Size (µm)	Cumulative Mass Passed (Percent)	Mass Frequency (Percent)
5/8 in.	16000.0	100.0	0.0	No. 60	250.0	43.4	24.5
No. 4	4750.0	95.7	4.3	No. 120	125.0	16.2	27.2
No. 10	2000.0	93.0	2.7	No. 230	63.0	3.6	12.6
No. 18	1000.0	86.1	6.9	No. 635	20.0	3.5	0.1
No. 35	500.0	67.9	18.2				

Analytical Resources, Inc.

SediGraph III V1.04

Unit 1

Serial Number: 399

Page 2

Sample ID: MP-12U
 Operator: BR
 Client: Newfields Northwest
 File: C:\...\OF06\OF06F.SMP
 Material/Liquid: Sediment / Water
 Measurement Principle: X-Ray monitored gravity sedimentation
 Calculation Method: Stokes sedimentation and Beer's law of extinction

Test Number: 1
 Analyzed: 1/12/2009 1:11:12PM
 Reported: 1/13/2009 11:44:41AM
 Liquid Visc: 0.7229 cp
 Analysis Temp: 35.0 °C

Analysis Type: High Speed(Adj)
 Run Time: 0:05 hrs:min
 Sample Density: 2.650 g/cm³
 Liquid Density: 0.9941 g/cm³
 Base/Full Scale: 128 / 87 kCnts/s
 Reynolds Number: 0.30

Report by Size Table

High Diameter (µm)	Cumulative Mass Finer (Percent)	Mass Frequency (Percent)	High Diameter (µm)	Cumulative Mass Finer (Percent)	Mass Frequency (Percent)
300.0	43.4	6.6	20.00	3.4	0.1
250.0	34.7	8.7	15.00	3.4	0.0
200.0	23.1	11.7	10.00	3.4	0.0
150.0	9.4	13.6	8.000	3.3	0.1
100.0	5.2	4.3	6.000	3.3	0.0
80.00	3.6	1.6	5.000	3.2	0.0
60.00	3.6	0.0	4.000	3.0	0.2
50.00	3.6	0.0	3.000	1.1	2.0
40.00	3.5	0.1	2.000	0.7	0.4
30.00	3.5	0.0	1.500	0.7	0.0
25.00	3.5	0.0			

Analytical Resources, Inc.

SediGraph III V1.04

Unit 1

Serial Number: 399

Page 3

Sample ID: MP-12U
Operator: BR
Client: Newfields Northwest
File: C:\...\OF06\OF06F.SMP
Material/Liquid: Sediment / Water
Measurement Principle: X-Ray monitored gravity sedimentation
Calculation Method: Stokes sedimentation and Beer's law of extinction

Test Number: 1
Analyzed: 1/12/2009 1:11:12PM
Reported: 1/13/2009 11:44:41AM
Liquid Visc: 0.7229 cp
Analysis Temp: 35.0 °C
Analysis Type: High Speed(Adj)
Run Time: 0:05 hrs:min
Sample Density: 2.650 g/cm³
Liquid Density: 0.9941 g/cm³
Base/Full Scale: 128 / 87 kCnts/s
Reynolds Number: 0.30

Report by Mass Percent

High Diameter (µm)	Cumulative Mass Finer (Percent)	Mass Frequency (Percent)	High Diameter (µm)	Cumulative Mass Finer (Percent)	Mass Frequency (Percent)
9500	100.0	0.0	344.7	50.0	5.0
9500	95.0	5.0	299.8	45.0	5.0
4149	90.0	5.0	261.2	40.0	5.0
1327	85.0	5.0	228.4	35.0	5.0
940.5	80.0	5.0	201.3	30.0	5.0
750.7	75.0	5.0	178.0	25.0	5.0
625.7	70.0	5.0	157.4	20.0	5.0
532.8	65.0	5.0	138.5	15.0	5.0
459.0	60.0	5.0	120.8	10.0	5.0
397.1	55.0	5.0	102.2	5.0	5.0

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SediGraph III V1.04

Unit 1

Serial Number: 399

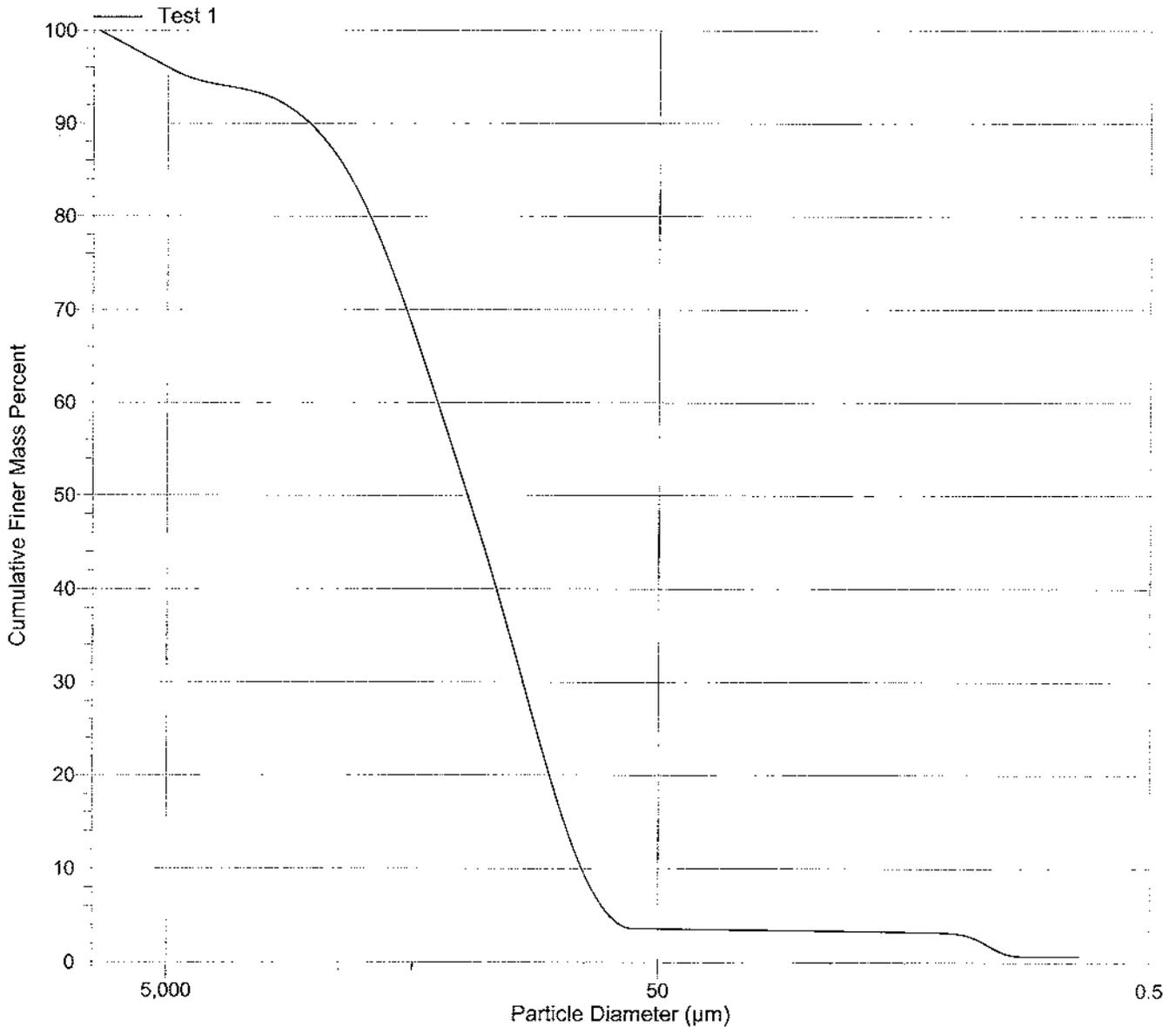
Page 4

Sample ID: MP-12U
Operator: BR
Client: Newfields Northwest
File: C:\...\AOF06\OF06F.SMP
Material/Liquid: Sediment / Water
Measurement Principle: X-Ray monitored gravity sedimentation
Calculation Method: Stokes sedimentation and Beer's law of extinction

Test Number: 1
Analyzed: 1/12/2009 1:11:12PM
Reported: 1/13/2009 11:44:41AM
Liquid Visc: 0.7229 cp
Analysis Temp: 35.0 °C

Analysis Type: High Speed(Adj)
Run Time: 0:05 hrs:min
Sample Density: 2.650 g/cm³
Liquid Density: 0.9941 g/cm³
Base/Full Scale: 128 / 87 kCnts/s
Reynolds Number: 0.30

Cumulative Finer Mass Percent vs. Diameter



Analytical Resources, Inc.

SediGraph III V1.04

Unit 1

Serial Number: 399

Page 1

Sample ID: MP-12L
Operator: BR
Client: Newfields Northwest
File: C:\...\AOF06\OF06G.SMP
Material/Liquid: Sediment / Water
Measurement Principle: X-Ray monitored gravity sedimentation
Calculation Method: Stokes sedimentation and Beer's law of extinction

Test Number: 1
Analyzed: 1/9/2009 5:18:32PM
Reported: 1/13/2009 11:45:48AM
Liquid Visc: 0.7229 cp
Analysis Temp: 35.0 °C
Analysis Type: High Speed(Adj)
Run Time: 0:05 hrs:min
Sample Density: 2.650 g/cm³
Liquid Density: 0.9941 g/cm³
Base/Full Scale: 128 / 73 kCnts/s
Reynolds Number: 0.30

Report by Sieve Size

Sieve Name	Aperture Size (µm)	Cumulative Mass Passed (Percent)	Mass Frequency (Percent)	Sieve Name	Aperture Size (µm)	Cumulative Mass Passed (Percent)	Mass Frequency (Percent)
No. 4	4750.0	100.0	0.0	No. 60	250.0	97.1	1.5
No. 10	2000.0	99.4	0.6	No. 120	125.0	88.7	8.4
No. 18	1000.0	99.3	0.1	No. 230	63.0	78.4	10.3
No. 35	500.0	98.6	0.7	No. 635	20.0	74.9	3.5

Analytical Resources, Inc.

SediGraph III V1.04

Unit 1

Serial Number: 399

Page 2

Sample ID: MP-12L
Operator: BR
Client: Newfields Northwest
File: C:\...\OF06\OF06G.SMP
Material/Liquid: Sediment / Water
Measurement Principle: X-Ray monitored gravity sedimentation
Calculation Method: Stokes sedimentation and Beer's law of extinction

Test Number: 1
Analyzed: 1/9/2009 5:18:32PM
Reported: 1/13/2009 11:45:48AM
Liquid Visc: 0.7229 cp
Analysis Temp: 35.0 °C
Analysis Type: High Speed(Adj)
Run Time: 0:05 hrs:min
Sample Density: 2.650 g/cm³
Liquid Density: 0.9941 g/cm³
Base/Full Scale: 128 / 73 kCnts/s
Reynolds Number: 0.30

Report by Size Table

High Diameter (µm)	Cumulative Mass Finer (Percent)	Mass Frequency (Percent)	High Diameter (µm)	Cumulative Mass Finer (Percent)	Mass Frequency (Percent)
300.0	97.1	0.7	20.00	72.8	2.1
250.0	95.2	1.9	15.00	68.0	4.8
200.0	91.3	3.9	10.00	64.7	3.2
150.0	84.9	6.3	8.000	59.7	5.0
100.0	80.9	4.1	6.000	56.3	3.4
80.00	78.4	2.5	5.000	52.2	4.1
60.00	78.2	0.2	4.000	46.6	5.6
50.00	77.7	0.5	3.000	39.8	6.8
40.00	77.2	0.5	2.000	35.7	4.1
30.00	76.2	1.0	1.500	30.5	5.2
25.00	74.9	1.3			

Analytical Resources, Inc.

SediGraph III V1.04

Unit 1

Serial Number: 399

Page 3

Sample ID: MP-12L
Operator: BR
Client: Newfields Northwest
File: C:\...\OF06\OF06G.SMP
Material/Liquid: Sediment / Water
Measurement Principle: X-Ray monitored gravity sedimentation
Calculation Method: Stokes sedimentation and Beer's law of extinction

Test Number: 1
Analyzed: 1/9/2009 5:18:32PM
Reported: 1/13/2009 11:45:48AM
Liquid Visc: 0.7229 cp
Analysis Temp: 35.0 °C
Analysis Type: High Speed(Adj)
Run Time: 0:05 hrs:min
Sample Density: 2.650 g/cm³
Liquid Density: 0.9941 g/cm³
Base/Full Scale: 128 / 73 kCnts/s
Reynolds Number: 0.30

Report by Mass Percent

High Diameter (µm)	Cumulative Mass Finer (Percent)	Mass Frequency (Percent)	High Diameter (µm)	Cumulative Mass Finer (Percent)	Mass Frequency (Percent)
4750	100.0	0.0	8.146	60.0	5.0
4750	95.0	5.0	6.090	55.0	5.0
196.9	90.0	5.0	4.650	50.0	5.0
137.3	85.0	5.0	3.573	45.0	5.0
100.4	80.0	5.0	2.744	40.0	5.0
75.49	75.0	5.0	2.021	35.0	5.0
20.50	70.0	5.0	1.423	30.0	5.0
11.69	65.0	5.0			

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SediGraph III V1.04

Unit 1

Serial Number: 399

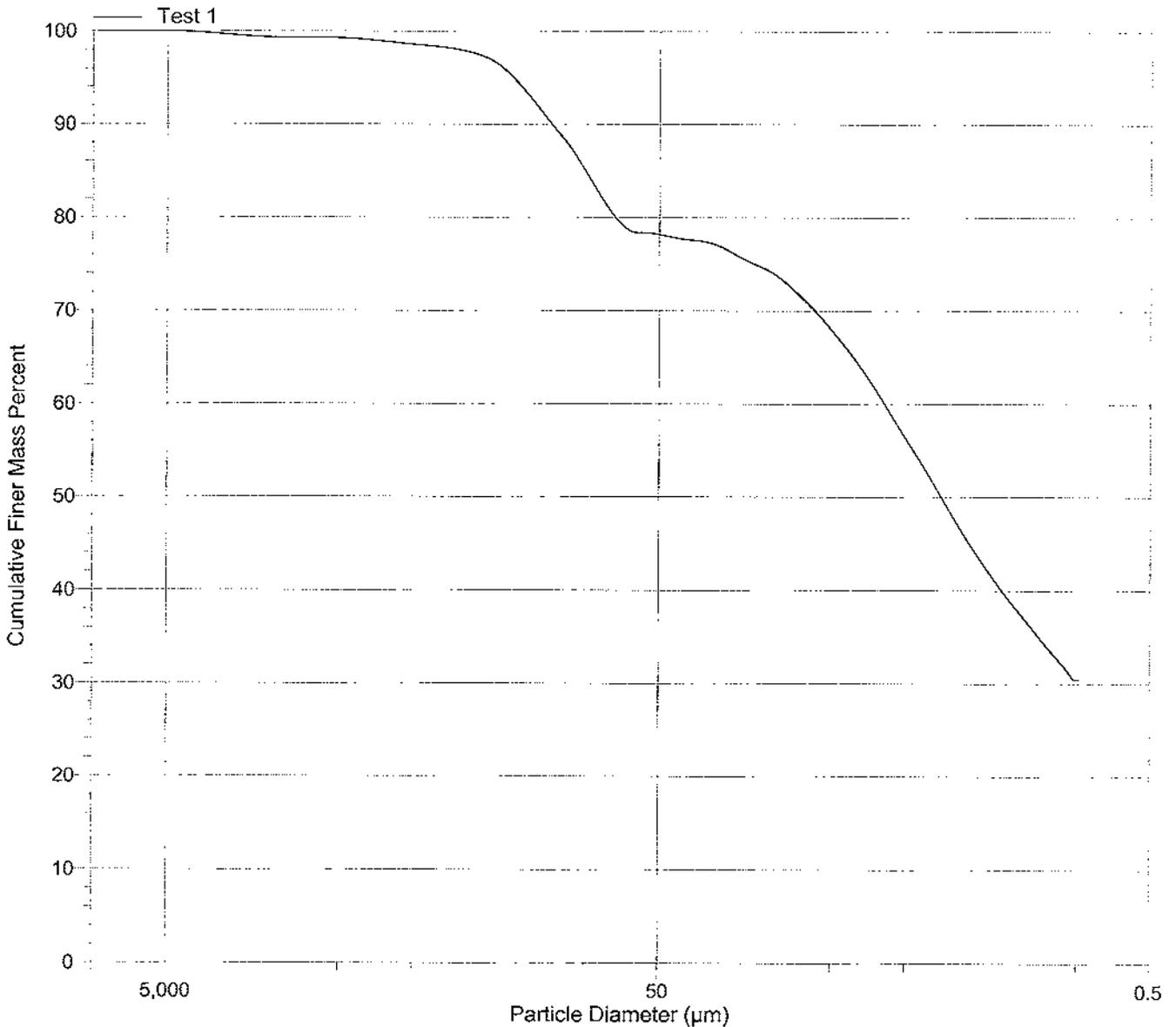
Page 4

Sample ID: MP-12L
Operator: BR
Client: Newfields Northwest
File: C:\...\AOF06\OF06G.SMP
Material/Liquid: Sediment / Water
Measurement Principle: X-Ray monitored gravity sedimentation
Calculation Method: Stokes sedimentation and Beer's law of extinction

Test Number: 1
Analyzed: 1/9/2009 5:18:32PM
Reported: 1/13/2009 11:45:48AM
Liquid Visc: 0.7229 cp
Analysis Temp: 35.0 °C

Analysis Type: High Speed(Adj)
Run Time: 0:05 hrs:min
Sample Density: 2.650 g/cm³
Liquid Density: 0.9941 g/cm³
Base/Full Scale: 128 / 73 kCnts/s
Reynolds Number: 0.30

Cumulative Finer Mass Percent vs. Diameter



Analytical Resources, Inc.

SediGraph III V1.04

Unit 1

Serial Number: 399

Page 1

Sample ID: MP-13U
Operator: BR
Client: Newfields Northwest
File: C:\...\OF06\OF06H.SMP
Material/Liquid: Sediment / Water
Measurement Principle: X-Ray monitored gravity sedimentation
Calculation Method: Stokes sedimentation and Beer's law of extinction

Test Number: 1
Analyzed: 1/12/2009 3:30:40PM
Reported: 1/13/2009 11:47:33AM
Liquid Visc: 0.7228 cp
Analysis Temp: 35.0 °C
Analysis Type: High Speed(Adj)
Run Time: 0:05 hrs:min
Sample Density: 2.650 g/cm³
Liquid Density: 0.9941 g/cm³
Base/Full Scale: 128 / 95 kCnts/s
Reynolds Number: 0.30

Report by Sieve Size

Sieve Name	Aperture Size (µm)	Cumulative Mass Passed (Percent)	Mass Frequency (Percent)	Sieve Name	Aperture Size (µm)	Cumulative Mass Passed (Percent)	Mass Frequency (Percent)
No. 10	2000.0	100.0	0.0	No. 120	125.0	32.6	19.2
No. 18	1000.0	98.0	2.0	No. 230	63.0	12.7	19.9
No. 35	500.0	79.0	19.0	No. 635	20.0	11.2	1.5
No. 60	250.0	51.8	27.2				

Analytical Resources, Inc.

SediGraph III V1.04

Unit 1

Serial Number: 399

Page 2

Sample ID: MP-13U
 Operator: BR
 Client: Newfields Northwest
 File: C:\...\OF06\OF06H.SMP
 Material/Liquid: Sediment / Water
 Measurement Principle: X-Ray monitored gravity sedimentation
 Calculation Method: Stokes sedimentation and Beer's law of extinction

Test Number: 1
 Analyzed: 1/12/2009 3:30:40PM
 Reported: 1/13/2009 11:47:33AM
 Liquid Visc: 0.7228 cp
 Analysis Temp: 35.0 °C

Analysis Type: High Speed(Adj)
 Run Time: 0:05 hrs:min
 Sample Density: 2.650 g/cm³
 Liquid Density: 0.9941 g/cm³
 Base/Full Scale: 128 / 95 kCnts/s
 Reynolds Number: 0.30

Report by Size Table

High Diameter (µm)	Cumulative Mass Finer (Percent)	Mass Frequency (Percent)	High Diameter (µm)	Cumulative Mass Finer (Percent)	Mass Frequency (Percent)
300.0	51.8	6.3	20.00	11.0	0.2
250.0	45.5	6.3	15.00	10.3	0.7
200.0	37.6	7.9	10.00	10.0	0.3
150.0	25.1	12.5	8.000	9.7	0.3
100.0	17.4	7.7	6.000	9.4	0.3
80.00	12.7	4.7	5.000	9.0	0.4
60.00	12.6	0.1	4.000	8.6	0.4
50.00	12.2	0.3	3.000	7.3	1.3
40.00	11.9	0.4	2.000	4.3	3.0
30.00	11.6	0.3	1.500	2.6	1.7
25.00	11.2	0.4			

Analytical Resources, Inc.

SediGraph III V1.04

Unit 1

Serial Number: 399

Page 3

Sample ID: MP-13U
Operator: BR
Client: Newfields Northwest
File: C:\...\OF06\OF06H.SMP
Material/Liquid: Sediment / Water
Measurement Principle: X-Ray monitored gravity sedimentation
Calculation Method: Stokes sedimentation and Beer's law of extinction

Test Number: 1
Analyzed: 1/12/2009 3:30:40PM
Reported: 1/13/2009 11:47:33AM
Liquid Visc: 0.7228 cp
Analysis Temp: 35.0 °C
Analysis Type: High Speed(Adj)
Run Time: 0:05 hrs:min
Sample Density: 2.650 g/cm³
Liquid Density: 0.9941 g/cm³
Base/Full Scale: 128 / 95 kCnts/s
Reynolds Number: 0.30

Report by Mass Percent

High Diameter (µm)	Cumulative Mass Finer (Percent)	Mass Frequency (Percent)	High Diameter (µm)	Cumulative Mass Finer (Percent)	Mass Frequency (Percent)
3082	100.0	0.0	276.2	50.0	5.0
3082	95.0	5.0	234.8	45.0	5.0
824.4	90.0	5.0	196.3	40.0	5.0
686.7	85.0	5.0	163.5	35.0	5.0
591.7	80.0	5.0	136.2	30.0	5.0
514.3	75.0	5.0	114.9	25.0	5.0
449.9	70.0	5.0	99.68	20.0	5.0
398.8	65.0	5.0	86.68	15.0	5.0
355.0	60.0	5.0	73.11	10.0	5.0
315.0	55.0	5.0	7.920	5.0	5.0

Analytical Resources, Inc.

SediGraph III V1.04

Unit 1

Serial Number: 399

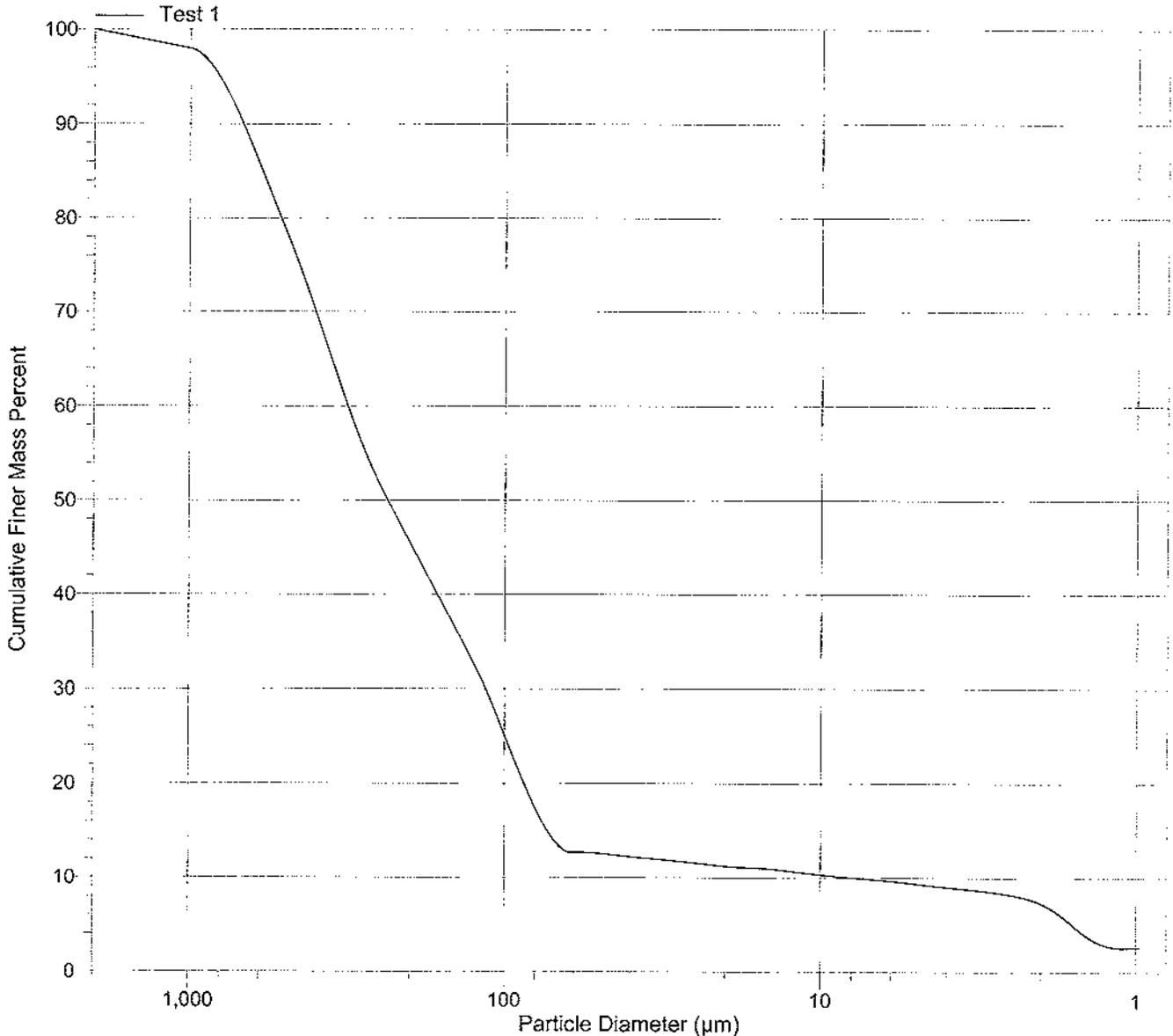
Page 4

Sample ID: MP-13U
Operator: BR
Client: Newfields Northwest
File: C:\...\OF06\OF06H.SMP
Material/Liquid: Sediment / Water
Measurement Principle: X-Ray monitored gravity sedimentation
Calculation Method: Stokes sedimentation and Beer's law of extinction

Test Number: 1
Analyzed: 1/12/2009 3:30:40PM
Reported: 1/13/2009 11:47:33AM
Liquid Visc: 0.7228 cp
Analysis Temp: 35.0 °C

Analysis Type: High Speed(Adj)
Run Time: 0:05 hrs:min
Sample Density: 2.650 g/cm³
Liquid Density: 0.9941 g/cm³
Base/Full Scale: 128 / 95 kCnts/s
Reynolds Number: 0.30

Cumulative Finer Mass Percent vs. Diameter



Analytical Resources, Inc.

SediGraph III V1.04

Unit 1

Serial Number: 399

Page 1

Sample ID: MP-13L
Operator: BR
Client: Newfields Northwest
File: C:\...\OF06\OF06I.SMP
Material/Liquid: Sediment / Water
Measurement Principle: X-Ray monitored gravity sedimentation
Calculation Method: Stokes sedimentation and Beer's law of extinction

Test Number: 1
Analyzed: 1/12/2009 3:52:57PM
Reported: 1/13/2009 11:50:50AM
Liquid Visc: 0.7227 cp
Analysis Temp: 35.0 °C
Analysis Type: High Speed(Adj)
Run Time: 0:05 hrs:min
Sample Density: 2.650 g/cm³
Liquid Density: 0.9941 g/cm³
Base/Full Scale: 128 / 78 kCnts/s
Reynolds Number: 0.30

Report by Sieve Size

Sieve Name	Aperture Size (µm)	Cumulative Mass Passed (Percent)	Mass Frequency (Percent)	Sieve Name	Aperture Size (µm)	Cumulative Mass Passed (Percent)	Mass Frequency (Percent)
5/8 in.	16000.0	100.0	0.0	No. 60	250.0	13.5	30.2
No. 4	4750.0	97.5	2.5	No. 120	125.0	7.2	6.3
No. 10	2000.0	93.3	4.2	No. 230	63.0	3.1	4.1
No. 18	1000.0	77.8	15.5	No. 635	20.0	2.9	0.2
No. 35	500.0	43.7	34.1				

Analytical Resources, Inc.

SediGraph III V1.04

Unit 1

Serial Number: 399

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Sample ID: MP-13L
 Operator: BR
 Client: Newfields Northwest
 File: C:\...\OF06\OF06I.SMP
 Material/Liquid: Sediment / Water
 Measurement Principle: X-Ray monitored gravity sedimentation
 Calculation Method: Stokes sedimentation and Beer's law of extinction

Test Number: 1	Analysis Type: High Speed(Adj)
Analyzed: 1/12/2009 3:52:57PM	Run Time: 0:05 hrs:min
Reported: 1/13/2009 11:50:50AM	Sample Density: 2.650 g/cm ³
Liquid Visc: 0.7227 cp	Liquid Density: 0.9941 g/cm ³
Analysis Temp: 35.0 °C	Base/Full Scale: 128 / 78 kCnts/s
	Reynolds Number: 0.30

Report by Size Table

High Diameter (µm)	Cumulative Mass Finer (Percent)	Mass Frequency (Percent)	High Diameter (µm)	Cumulative Mass Finer (Percent)	Mass Frequency (Percent)
300.0	13.5	5.6	20.00	2.7	0.1
250.0	10.1	3.4	15.00	2.5	0.2
200.0	8.2	1.9	10.00	2.3	0.2
150.0	5.5	2.6	8.000	1.9	0.4
100.0	3.9	1.6	6.000	1.4	0.5
80.00	3.1	0.8	5.000	1.0	0.4
60.00	3.1	0.0	4.000	1.0	0.1
50.00	3.1	0.0	3.000	0.9	0.0
40.00	3.0	0.1	2.000	0.9	0.0
30.00	2.9	0.1	1.500	0.9	0.0
25.00	2.9	0.1			

Analytical Resources, Inc.

SediGraph III V1.04

Unit 1

Serial Number: 399

Page 3

Sample ID: MP-13L
 Operator: BR
 Client: Newfields Northwest
 File: C:\...\OF06\OF06I.SMP
 Material/Liquid: Sediment / Water
 Measurement Principle: X-Ray monitored gravity sedimentation
 Calculation Method: Stokes sedimentation and Beer's law of extinction

Test Number: 1	Analysis Type: High Speed(Adj)
Analyzed: 1/12/2009 3:52:57PM	Run Time: 0:05 hrs:min
Reported: 1/13/2009 11:50:50AM	Sample Density: 2.650 g/cm ³
Liquid Visc: 0.7227 cp	Liquid Density: 0.9941 g/cm ³
Analysis Temp: 35.0 °C	Base/Full Scale: 128 / 78 kCnts/s
	Reynolds Number: 0.30

Report by Mass Percent

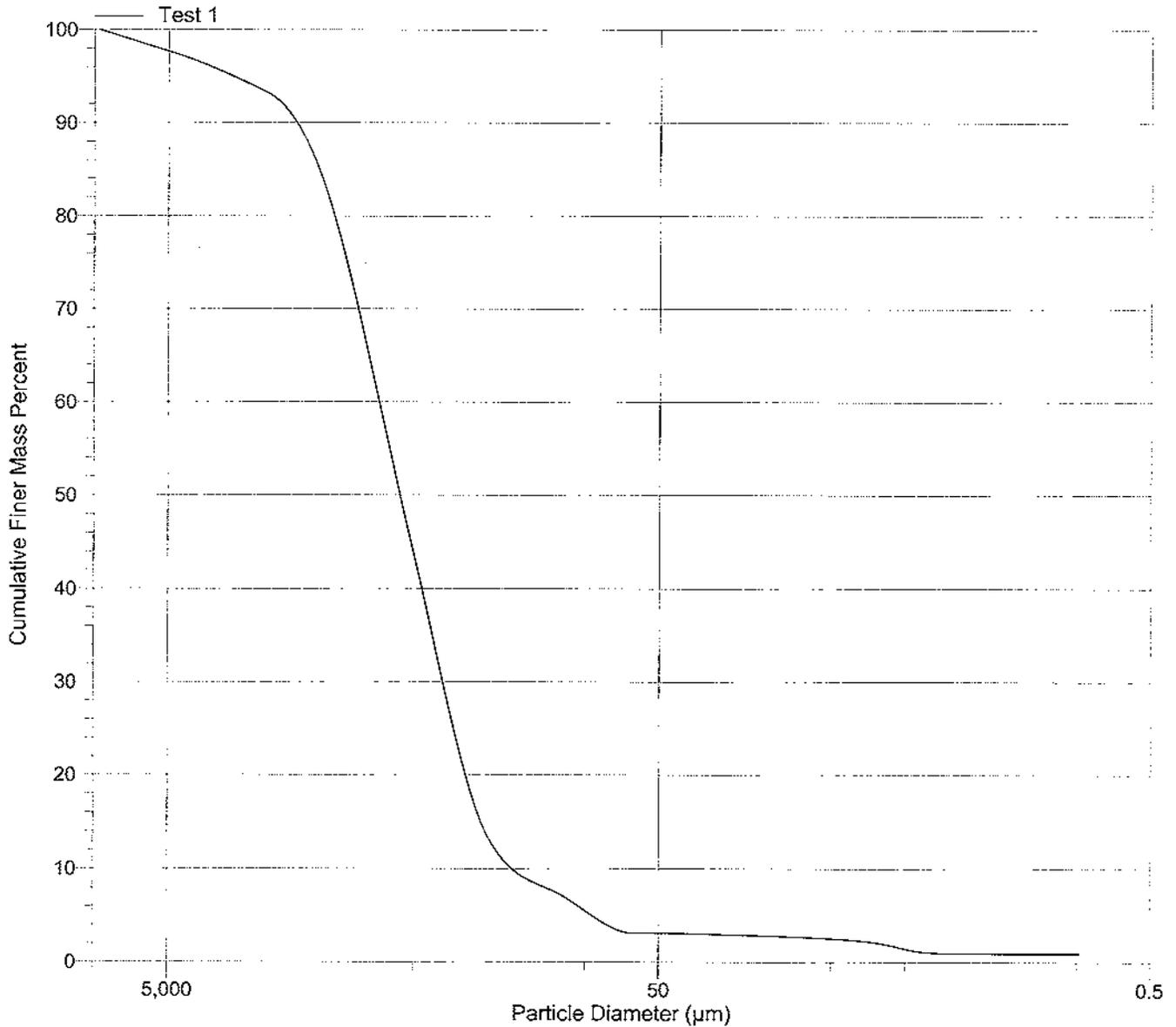
High Diameter (µm)	Cumulative Mass Finer (Percent)	Mass Frequency (Percent)	High Diameter (µm)	Cumulative Mass Finer (Percent)	Mass Frequency (Percent)
9500	100.0	0.0	628.1	50.0	5.0
9500	95.0	5.0	569.3	45.0	5.0
2730	90.0	5.0	514.0	40.0	5.0
1506	85.0	5.0	463.1	35.0	5.0
1221	80.0	5.0	419.5	30.0	5.0
1055	75.0	5.0	380.2	25.0	5.0
938.4	70.0	5.0	343.3	20.0	5.0
843.8	65.0	5.0	306.6	15.0	5.0
763.1	60.0	5.0	265.6	10.0	5.0
692.1	55.0	5.0	198.3	5.0	5.0

Sample ID: MP-13L
Operator: BR
Client: Newfields Northwest
File: C:\...\OF06\OF06I.SMP
Material/Liquid: Sediment / Water
Measurement Principle: X-Ray monitored gravity sedimentation
Calculation Method: Stokes sedimentation and Beer's law of extinction

Test Number: 1
Analyzed: 1/12/2009 3:52:57PM
Reported: 1/13/2009 11:50:50AM
Liquid Visc: 0.7227 cp
Analysis Temp: 35.0 °C

Analysis Type: High Speed(Adj)
Run Time: 0:05 hrs:min
Sample Density: 2.650 g/cm³
Liquid Density: 0.9941 g/cm³
Base/Full Scale: 128 / 78 kCnts/s
Reynolds Number: 0.30

Cumulative Finer Mass Percent vs. Diameter



Analytical Resources, Inc.

SediGraph III V1.04

Unit 1

Serial Number: 399

Page 1

Sample ID: MP-14U
Operator: BR
Client: Newfields Northwest
File: C:\...\AOF06\OF06J.SMP
Material/Liquid: Sediment / Water
Measurement Principle: X-Ray monitored gravity sedimentation
Calculation Method: Stokes sedimentation and Beer's law of extinction

Test Number: 1
Analyzed: 1/12/2009 4:18:05PM
Reported: 1/13/2009 11:51:31AM
Liquid Visc: 0.7228 cp
Analysis Temp: 35.0 °C
Analysis Type: High Speed(Adj)
Run Time: 0:05 hrs:min
Sample Density: 2.650 g/cm³
Liquid Density: 0.9941 g/cm³
Base/Full Scale: 128 / 102 kCnts/s
Reynolds Number: 0.30

Report by Sieve Size

Sieve Name	Aperture Size (µm)	Cumulative Mass Passed (Percent)	Mass Frequency (Percent)	Sieve Name	Aperture Size (µm)	Cumulative Mass Passed (Percent)	Mass Frequency (Percent)
5/8 in.	16000.0	100.0	0.0	No. 60	250.0	14.1	36.4
No. 4	4750.0	99.8	0.2	No. 120	125.0	3.5	10.6
No. 10	2000.0	97.8	2.0	No. 230	63.0	1.1	2.4
No. 18	1000.0	83.0	14.8	No. 635	20.0	1.0	0.1
No. 35	500.0	50.5	32.5				

Analytical Resources, Inc.

SediGraph III V1.04

Unit 1

Serial Number: 399

Page 2

Sample ID: MP-14U
 Operator: BR
 Client: Newfields Northwest
 File: C:\...\OF06\OF06J.SMP
 Material/Liquid: Sediment / Water
 Measurement Principle: X-Ray monitored gravity sedimentation
 Calculation Method: Stokes sedimentation and Beer's law of extinction

Test Number: 1
 Analyzed: 1/12/2009 4:18:05PM
 Reported: 1/13/2009 11:51:31AM
 Liquid Visc: 0.7228 cp
 Analysis Temp: 35.0 °C

Analysis Type: High Speed(Adj)
 Run Time: 0:05 hrs:min
 Sample Density: 2.650 g/cm³
 Liquid Density: 0.9941 g/cm³
 Base/Full Scale: 128 / 102 kCnts/s
 Reynolds Number: 0.30

Report by Size Table

High Diameter (µm)	Cumulative Mass Finer (Percent)	Mass Frequency (Percent)	High Diameter (µm)	Cumulative Mass Finer (Percent)	Mass Frequency (Percent)
300.0	14.1	8.5	20.00	1.0	0.0
250.0	7.6	6.5	15.00	1.0	0.0
200.0	4.3	3.2	10.00	0.9	0.0
150.0	2.4	1.9	8.000	0.9	0.0
100.0	1.5	0.9	6.000	0.9	0.0
80.00	1.1	0.4	5.000	0.8	0.0
60.00	1.1	0.0	4.000	0.8	0.1
50.00	1.1	0.0	3.000	0.7	0.1
40.00	1.1	0.0	2.000	0.7	0.0
30.00	1.0	0.0	1.500	0.7	0.0
25.00	1.0	0.0			

Analytical Resources, Inc.

SediGraph III V1.04

Unit 1

Serial Number: 399

Page 3

Sample ID: MP-14U
 Operator: BR
 Client: Newfields Northwest
 File: C:\...\AOF06\OF06J.SMP
 Material/Liquid: Sediment / Water
 Measurement Principle: X-Ray monitored gravity sedimentation
 Calculation Method: Stokes sedimentation and Beer's law of extinction

Test Number: 1	Analysis Type: High Speed(Adj)
Analyzed: 1/12/2009 4:18:05PM	Run Time: 0:05 hrs:min
Reported: 1/13/2009 11:51:31AM	Sample Density: 2.650 g/cm ³
Liquid Visc: 0.7228 cp	Liquid Density: 0.9941 g/cm ³
Analysis Temp: 35.0 °C	Base/Full Scale: 128 / 102 kCnts/s
	Reynolds Number: 0.30

Report by Mass Percent

High Diameter (µm)	Cumulative Mass Finer (Percent)	Mass Frequency (Percent)	High Diameter (µm)	Cumulative Mass Finer (Percent)	Mass Frequency (Percent)
9500	100.0	0.0	547.8	50.0	5.0
9500	95.0	5.0	495.0	45.0	5.0
1520	90.0	5.0	449.5	40.0	5.0
1222	85.0	5.0	410.5	35.0	5.0
1052	80.0	5.0	375.8	30.0	5.0
931.0	75.0	5.0	343.9	25.0	5.0
831.3	70.0	5.0	314.0	20.0	5.0
746.1	65.0	5.0	284.9	15.0	5.0
671.9	60.0	5.0	255.5	10.0	5.0
606.4	55.0	5.0	221.6	5.0	5.0

Analytical Resources, Inc.

SediGraph III V1.04

Unit 1

Serial Number: 399

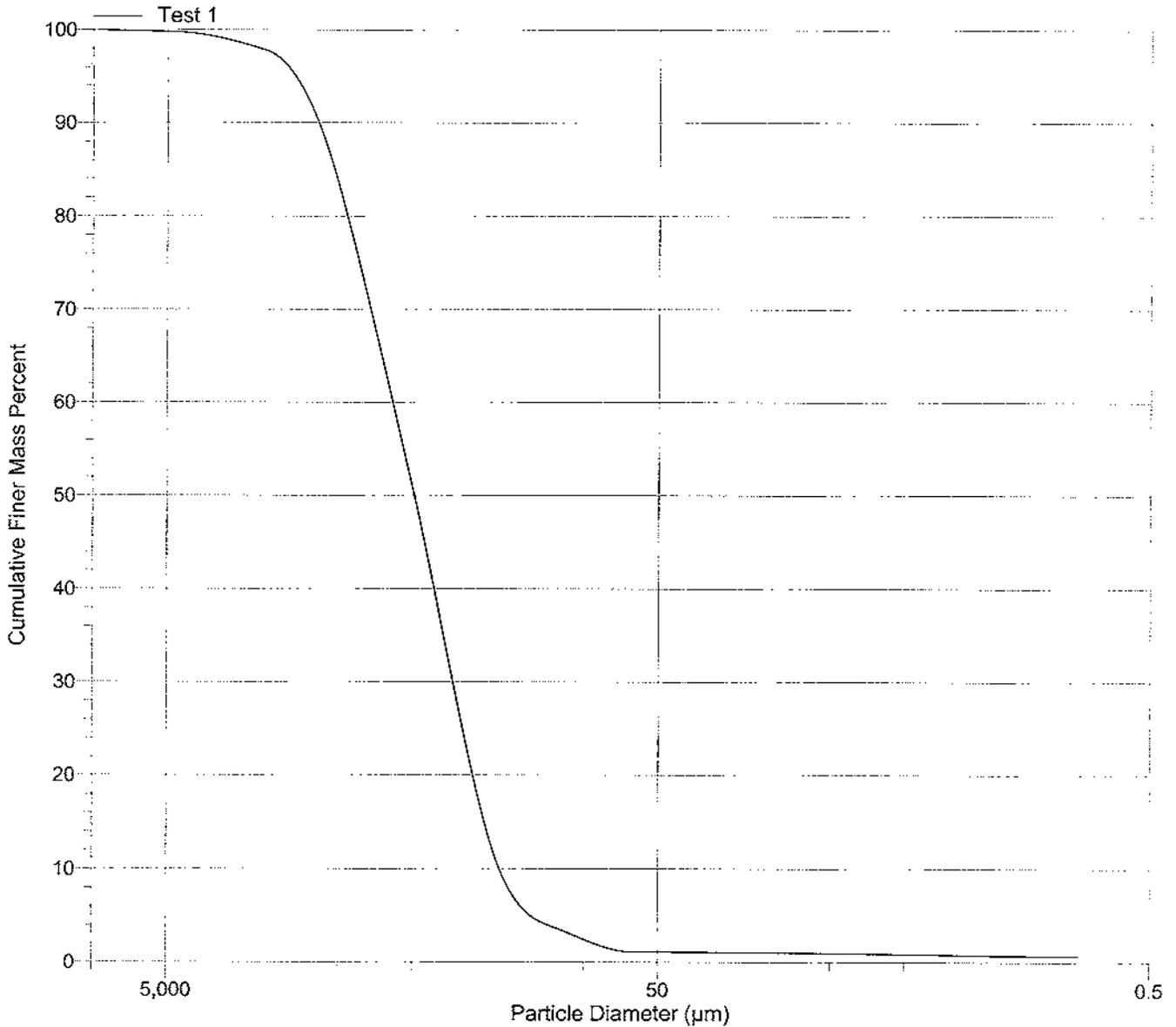
Page 4

Sample ID: MP-14U
Operator: BR
Client: Newfields Northwest
File: C:\...\OF06\OF06J.SMP
Material/Liquid: Sediment / Water
Measurement Principle: X-Ray monitored gravity sedimentation
Calculation Method: Stokes sedimentation and Beer's law of extinction

Test Number: 1
Analyzed: 1/12/2009 4:18:05PM
Reported: 1/13/2009 11:51:31AM
Liquid Visc: 0.7228 cp
Analysis Temp: 35.0 °C

Analysis Type: High Speed(Adj)
Run Time: 0:05 hrs:min
Sample Density: 2.650 g/cm³
Liquid Density: 0.9941 g/cm³
Base/Full Scale: 128 / 102 kCnts/s
Reynolds Number: 0.30

Cumulative Finer Mass Percent vs. Diameter



Analytical Resources, Inc.

SediGraph III V1.04

Unit 1

Serial Number: 399

Page 1

Sample ID: MP-14L
Operator: BR
Client: Newfields Northwest
File: C:\...\AOF06\OF06K.SMP
Material/Liquid: Sediment / Water
Measurement Principle: X-Ray monitored gravity sedimentation
Calculation Method: Stokes sedimentation and Beer's law of extinction

Test Number: 1
Analyzed: 1/12/2009 4:39:13PM
Reported: 1/13/2009 11:52:22AM
Liquid Visc: 0.7227 cp
Analysis Temp: 35.0 °C
Analysis Type: High Speed(Adj)
Run Time: 0:05 hrs:min
Sample Density: 2.650 g/cm³
Liquid Density: 0.9941 g/cm³
Base/Full Scale: 128 / 88 kCnts/s
Reynolds Number: 0.30

Report by Sieve Size

Sieve Name	Aperture Size (µm)	Cumulative Mass Passed (Percent)	Mass Frequency (Percent)	Sieve Name	Aperture Size (µm)	Cumulative Mass Passed (Percent)	Mass Frequency (Percent)
No. 4	4750.0	100.0	0.0	No. 60	250.0	77.5	6.8
No. 10	2000.0	95.5	4.5	No. 120	125.0	59.6	17.9
No. 18	1000.0	90.3	5.2	No. 230	63.0	45.4	14.2
No. 35	500.0	84.3	6.0	No. 635	20.0	38.5	6.9

Analytical Resources, Inc.

SediGraph III V1.04

Unit 1

Serial Number: 399

Page 2

Sample ID: MP-14L
Operator: BR
Client: Newfields Northwest
File: C:\...\OF06\OF06K.SMP
Material/Liquid: Sediment / Water
Measurement Principle: X-Ray monitored gravity sedimentation
Calculation Method: Stokes sedimentation and Beer's law of extinction

Test Number: 1
Analyzed: 1/12/2009 4:39:13PM
Reported: 1/13/2009 11:52:22AM
Liquid Visc: 0.7227 cp
Analysis Temp: 35.0 °C
Analysis Type: High Speed(Adj)
Run Time: 0:05 hrs:min
Sample Density: 2.650 g/cm³
Liquid Density: 0.9941 g/cm³
Base/Full Scale: 128 / 88 kCnts/s
Reynolds Number: 0.30

Report by Size Table

High Diameter (µm)	Cumulative Mass Finer (Percent)	Mass Frequency (Percent)	High Diameter (µm)	Cumulative Mass Finer (Percent)	Mass Frequency (Percent)
300.0	77.5	2.1	20.00	36.0	2.5
250.0	73.0	4.5	15.00	30.8	5.2
200.0	64.5	8.4	10.00	28.1	2.7
150.0	53.8	10.7	8.000	24.9	3.2
100.0	48.4	5.4	6.000	23.0	1.9
80.00	45.4	3.0	5.000	20.9	2.1
60.00	45.1	0.3	4.000	18.7	2.2
50.00	43.8	1.2	3.000	16.1	2.6
40.00	42.0	1.9	2.000	14.4	1.7
30.00	40.6	1.4	1.500	12.6	1.7
25.00	38.5	2.1			

Analytical Resources, Inc.

SediGraph III V1.04

Unit 1

Serial Number: 399

Page 3

Sample ID: MP-14L
Operator: BR
Client: Newfields Northwest
File: C:\...\AOF06\OF06K.SMP
Material/Liquid: Sediment / Water
Measurement Principle: X-Ray monitored gravity sedimentation
Calculation Method: Stokes sedimentation and Beer's law of extinction

Test Number: 1
Analyzed: 1/12/2009 4:39:13PM
Reported: 1/13/2009 11:52:22AM
Liquid Visc: 0.7227 cp
Analysis Temp: 35.0 °C
Analysis Type: High Speed(Adj)
Run Time: 0:05 hrs:min
Sample Density: 2.650 g/cm³
Liquid Density: 0.9941 g/cm³
Base/Full Scale: 128 / 88 kCnts/s
Reynolds Number: 0.30

Report by Mass Percent

High Diameter (µm)	Cumulative Mass Finer (Percent)	Mass Frequency (Percent)	High Diameter (µm)	Cumulative Mass Finer (Percent)	Mass Frequency (Percent)
4750	100.0	0.0	104.5	50.0	5.0
4750	95.0	5.0	85.98	45.0	5.0
1864	90.0	5.0	48.94	40.0	5.0
964.5	85.0	5.0	23.51	35.0	5.0
541.6	80.0	5.0	13.74	30.0	5.0
311.1	75.0	5.0	9.395	25.0	5.0
217.4	70.0	5.0	6.065	20.0	5.0
179.9	65.0	5.0	3.616	15.0	5.0
152.3	60.0	5.0	1.679	10.0	5.0
127.1	55.0	5.0			

Analytical Resources, Inc.

SediGraph III V1.04

Unit 1

Serial Number: 399

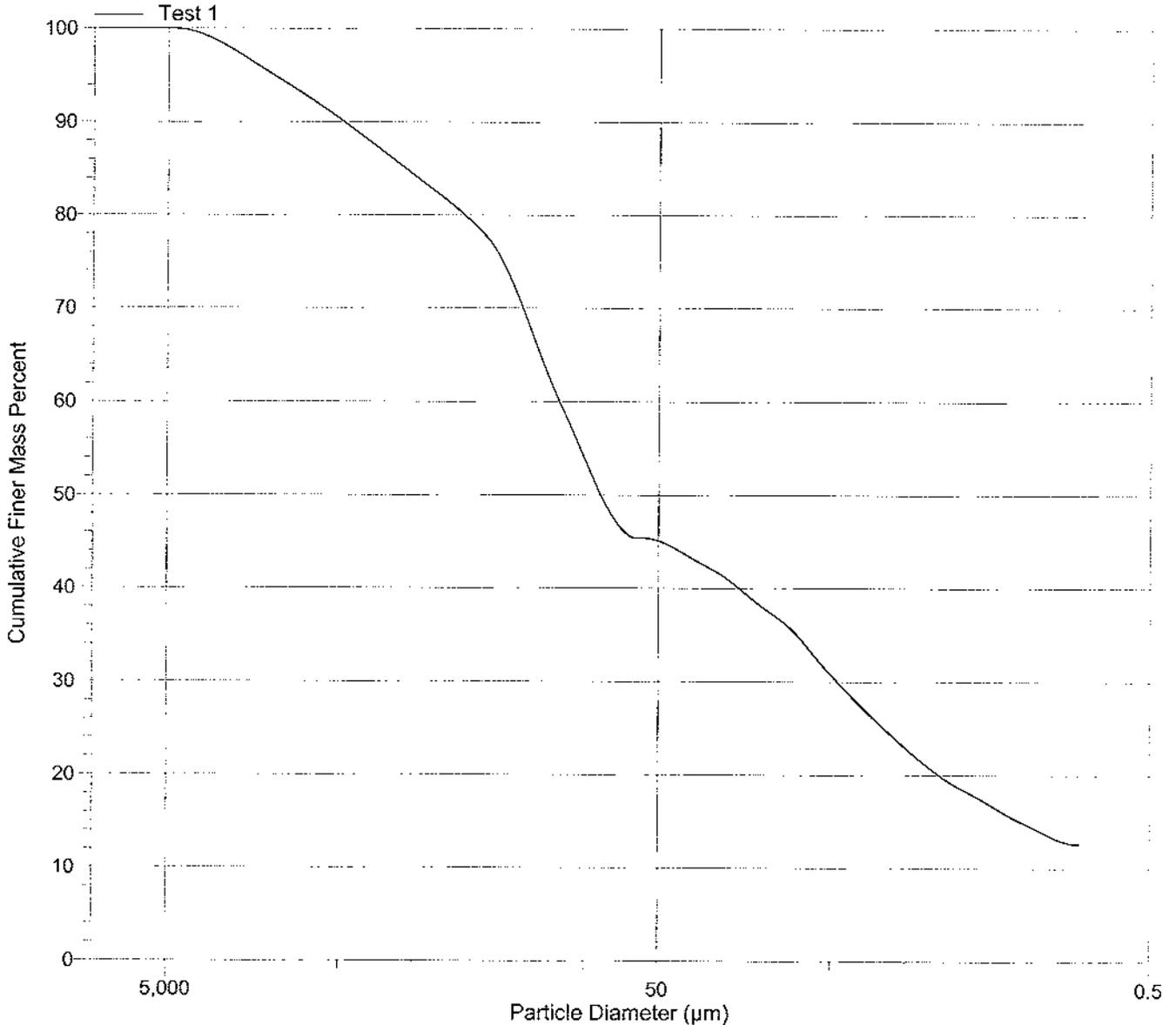
Page 4

Sample ID: MP-14L
Operator: BR
Client: Newfields Northwest
File: C:\...\OF06\OF06K.SMP
Material/Liquid: Sediment / Water
Measurement Principle: X-Ray monitored gravity sedimentation
Calculation Method: Stokes sedimentation and Beer's law of extinction

Test Number: 1
Analyzed: 1/12/2009 4:39:13PM
Reported: 1/13/2009 11:52:22AM
Liquid Visc: 0.7227 cp
Analysis Temp: 35.0 °C

Analysis Type: High Speed(Adj)
Run Time: 0:05 hrs:min
Sample Density: 2.650 g/cm³
Liquid Density: 0.9941 g/cm³
Base/Full Scale: 128 / 88 kCnts/s
Reynolds Number: 0.30

Cumulative Finer Mass Percent vs. Diameter



Analytical Resources, Inc.

SediGraph III V1.04

Unit 1

Serial Number: 399

Page 1

Sample ID: MP-15U
Operator: BR
Client: Newfields Northwest
File: C:\...\OF06\OF06L.SMP
Material/Liquid: Sediment / Water
Measurement Principle: X-Ray monitored gravity sedimentation
Calculation Method: Stokes sedimentation and Beer's law of extinction

Test Number: 1
Analyzed: 1/13/2009 11:30:00AM
Reported: 1/13/2009 11:54:17AM
Liquid Visc: 0.7230 cp
Analysis Temp: 35.0 °C
Analysis Type: High Speed(Adj)
Run Time: 0:05 hrs:min
Sample Density: 2.650 g/cm³
Liquid Density: 0.9941 g/cm³
Base/Full Scale: 128 / 92 kCnts/s
Reynolds Number: 0.30

Report by Sieve Size

Sieve Name	Aperture Size (µm)	Cumulative Mass Passed (Percent)	Mass Frequency (Percent)	Sieve Name	Aperture Size (µm)	Cumulative Mass Passed (Percent)	Mass Frequency (Percent)
No. 4	4750.0	100.0	0.0	No. 60	250.0	79.3	14.1
No. 10	2000.0	99.4	0.6	No. 120	125.0	52.2	27.1
No. 18	1000.0	98.5	0.9	No. 230	63.0	34.7	17.5
No. 35	500.0	93.4	5.1	No. 635	20.0	30.2	4.5

Analytical Resources, Inc.

SediGraph III V1.04

Unit 1

Serial Number: 399

Page 2

Sample ID: MP-15U
Operator: BR
Client: Newfields Northwest
File: C:\...\OF06\OF06L.SMP
Material/Liquid: Sediment / Water
Measurement Principle: X-Ray monitored gravity sedimentation
Calculation Method: Stokes sedimentation and Beer's law of extinction

Test Number: 1
Analyzed: 1/13/2009 11:30:00AM
Reported: 1/13/2009 11:54:17AM
Liquid Visc: 0.7230 cp
Analysis Temp: 35.0 °C
Analysis Type: High Speed(Adj)
Run Time: 0:05 hrs:min
Sample Density: 2.650 g/cm³
Liquid Density: 0.9941 g/cm³
Base/Full Scale: 128 / 92 kCnts/s
Reynolds Number: 0.30

Report by Size Table

High Diameter (µm)	Cumulative Mass Finer (Percent)	Mass Frequency (Percent)	High Diameter (µm)	Cumulative Mass Finer (Percent)	Mass Frequency (Percent)
300.0	79.3	5.0	20.00	28.4	1.8
250.0	71.3	8.0	15.00	25.6	2.9
200.0	59.1	12.2	10.00	24.1	1.5
150.0	44.5	14.6	8.000	22.1	2.0
100.0	37.8	6.7	6.000	20.9	1.2
80.00	34.7	3.1	5.000	19.6	1.2
60.00	34.6	0.1	4.000	18.2	1.4
50.00	34.1	0.5	3.000	15.4	2.8
40.00	32.8	1.3	2.000	9.4	6.1
30.00	31.7	1.0	1.500	4.4	5.0
25.00	30.2	1.5			

Analytical Resources, Inc.

SediGraph III V1.04

Unit 1

Serial Number: 399

Page 3

Sample ID: MP-15U
Operator: BR
Client: Newfields Northwest
File: C:\...\AOF06\OF06L.SMP
Material/Liquid: Sediment / Water
Measurement Principle: X-Ray monitored gravity sedimentation
Calculation Method: Stokes sedimentation and Beer's law of extinction

Test Number: 1
Analyzed: 1/13/2009 11:30:00AM
Reported: 1/13/2009 11:54:17AM
Liquid Visc: 0.7230 cp
Analysis Temp: 35.0 °C
Analysis Type: High Speed(Adj)
Run Time: 0:05 hrs:min
Sample Density: 2.650 g/cm³
Liquid Density: 0.9941 g/cm³
Base/Full Scale: 128 / 92 kCnts/s
Reynolds Number: 0.30

Report by Mass Percent

High Diameter (µm)	Cumulative Mass Finer (Percent)	Mass Frequency (Percent)	High Diameter (µm)	Cumulative Mass Finer (Percent)	Mass Frequency (Percent)
4750	100.0	0.0	135.2	50.0	5.0
4750	95.0	5.0	117.2	45.0	5.0
584.3	90.0	5.0	101.6	40.0	5.0
392.8	85.0	5.0	86.89	35.0	5.0
309.1	80.0	5.0	67.46	30.0	5.0
256.1	75.0	5.0	19.40	25.0	5.0
220.0	70.0	5.0	9.182	20.0	5.0
193.9	65.0	5.0	4.316	15.0	5.0
172.4	60.0	5.0	1.936	10.0	5.0
153.3	55.0	5.0	1.537	5.0	5.0

Analytical Resources, Inc.

SediGraph III V1.04

Unit 1

Serial Number: 399

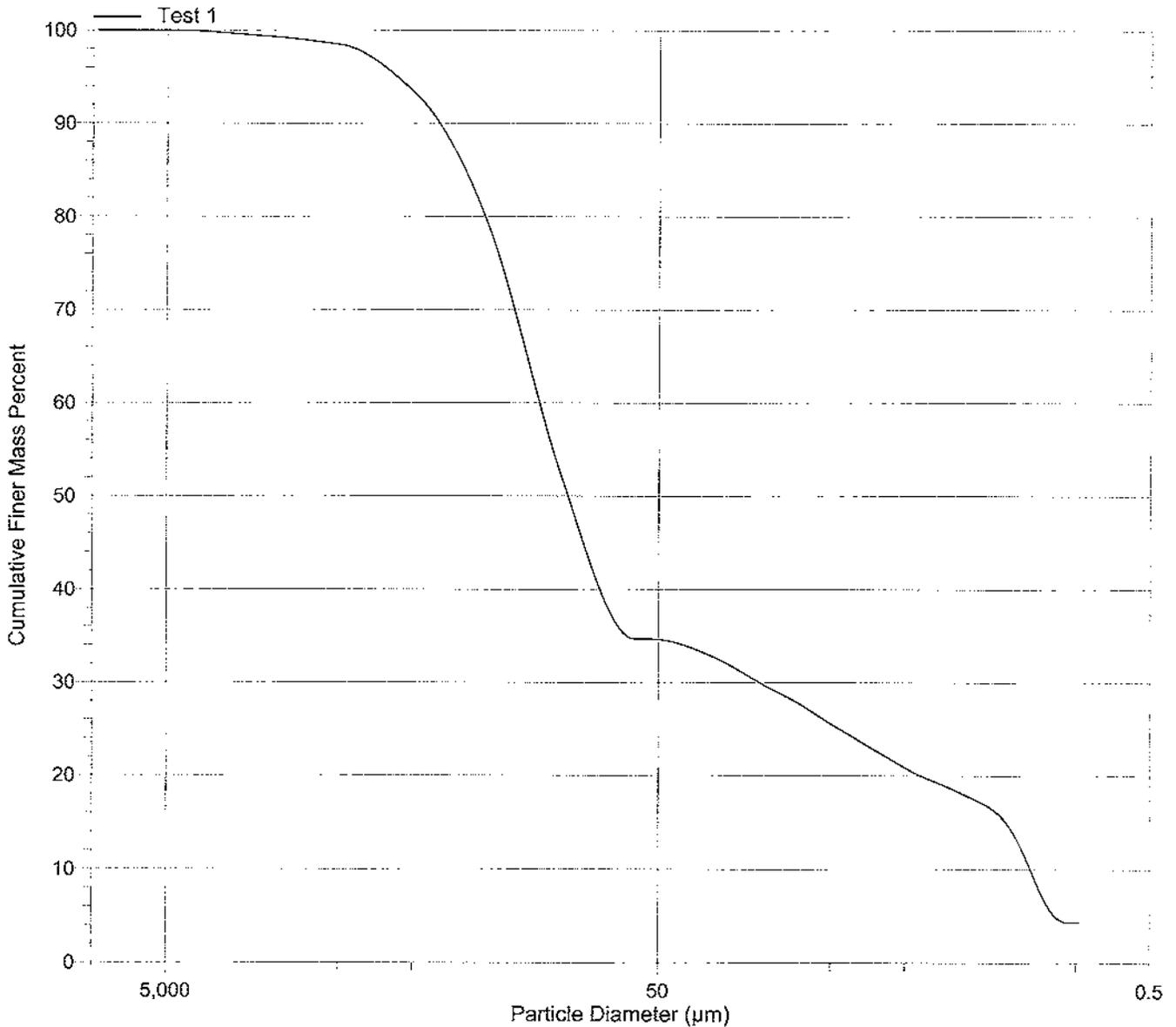
Page 4

Sample ID: MP-15U
Operator: BR
Client: Newfields Northwest
File: C:\...\AOF06\OF06L.SMP
Material/Liquid: Sediment / Water
Measurement Principle: X-Ray monitored gravity sedimentation
Calculation Method: Stokes sedimentation and Beer's law of extinction

Test Number: 1
Analyzed: 1/13/2009 11:30:00AM
Reported: 1/13/2009 11:54:17AM
Liquid Visc: 0.7230 cp
Analysis Temp: 35.0 °C

Analysis Type: High Speed(Adj)
Run Time: 0:05 hrs:min
Sample Density: 2.650 g/cm³
Liquid Density: 0.9941 g/cm³
Base/Full Scale: 128 / 92 kCnts/s
Reynolds Number: 0.30

Cumulative Finer Mass Percent vs. Diameter



Analytical Resources, Inc.

SediGraph III V1.04

Unit 1

Serial Number: 399

Page 1

Sample ID: MP-15L
Operator: BR
Client: Newfields Northwest
File: C:\...\AOF06\OF06M.SMP
Material/Liquid: Sediment / Water
Measurement Principle: X-Ray monitored gravity sedimentation
Calculation Method: Stokes sedimentation and Beer's law of extinction

Test Number: 1
Analyzed: 1/13/2009 11:52:27AM
Reported: 1/13/2009 12:01:07PM
Liquid Visc: 0.7230 cp
Analysis Temp: 35.0 °C
Analysis Type: High Speed(Adj)
Run Time: 0:05 hrs:min
Sample Density: 2.650 g/cm³
Liquid Density: 0.9941 g/cm³
Base/Full Scale: 128 / 113 kCnts/s
Reynolds Number: 0.30

Report by Sieve Size

Sieve Name	Aperture Size (µm)	Cumulative Mass Passed (Percent)	Mass Frequency (Percent)	Sieve Name	Aperture Size (µm)	Cumulative Mass Passed (Percent)	Mass Frequency (Percent)
5/8 in.	16000.0	100.0	0.0	No. 60	250.0	4.8	19.4
No. 4	4750.0	91.7	8.3	No. 120	125.0	1.0	3.8
No. 10	2000.0	74.9	16.8	No. 230	63.0	0.5	0.5
No. 18	1000.0	50.0	24.9	No. 635	20.0	0.5	0.0
No. 35	500.0	24.2	25.8				

Analytical Resources, Inc.

SediGraph III V1.04

Unit 1

Serial Number: 399

Page 2

Sample ID: MP-15L
Operator: BR
Client: Newfields Northwest
File: C:\...\AOF06\OF06M.SMP
Material/Liquid: Sediment / Water
Measurement Principle: X-Ray monitored gravity sedimentation
Calculation Method: Stokes sedimentation and Beer's law of extinction

Test Number: 1
Analyzed: 1/13/2009 11:52:27AM
Reported: 1/13/2009 12:01:07PM
Liquid Visc: 0.7230 cp
Analysis Temp: 35.0 °C
Analysis Type: High Speed(Adj)
Run Time: 0:05 hrs:min
Sample Density: 2.650 g/cm³
Liquid Density: 0.9941 g/cm³
Base/Full Scale: 128 / 113 kCnts/s
Reynolds Number: 0.30

Report by Size Table

High Diameter (µm)	Cumulative Mass Finer (Percent)	Mass Frequency (Percent)	High Diameter (µm)	Cumulative Mass Finer (Percent)	Mass Frequency (Percent)
300.0	4.8	3.3	20.00	0.5	0.0
250.0	2.6	2.2	15.00	0.5	0.0
200.0	1.3	1.3	10.00	0.5	0.0
150.0	0.8	0.5	8.000	0.5	0.0
100.0	0.6	0.2	6.000	0.5	0.0
80.00	0.5	0.1	5.000	0.5	0.0
60.00	0.5	0.0	4.000	0.5	0.0
50.00	0.5	0.0	3.000	0.5	0.0
40.00	0.5	0.0	2.000	0.4	0.0
30.00	0.5	0.0	1.500	0.5	0.0
25.00	0.5	0.0			

Analytical Resources, Inc.

SediGraph III V1.04

Unit 1

Serial Number: 399

Page 3

Sample ID: MP-15L
Operator: BR
Client: Newfields Northwest
File: C:\...\OF06\OF06M.SMP
Material/Liquid: Sediment / Water
Measurement Principle: X-Ray monitored gravity sedimentation
Calculation Method: Stokes sedimentation and Beer's law of extinction

Test Number: 1
Analyzed: 1/13/2009 11:52:27AM
Reported: 1/13/2009 12:01:07PM
Liquid Visc: 0.7230 cp
Analysis Temp: 35.0 °C
Analysis Type: High Speed(Adj)
Run Time: 0:05 hrs:min
Sample Density: 2.650 g/cm³
Liquid Density: 0.9941 g/cm³
Base/Full Scale: 128 / 113 kCnts/s
Reynolds Number: 0.30

Report by Mass Percent

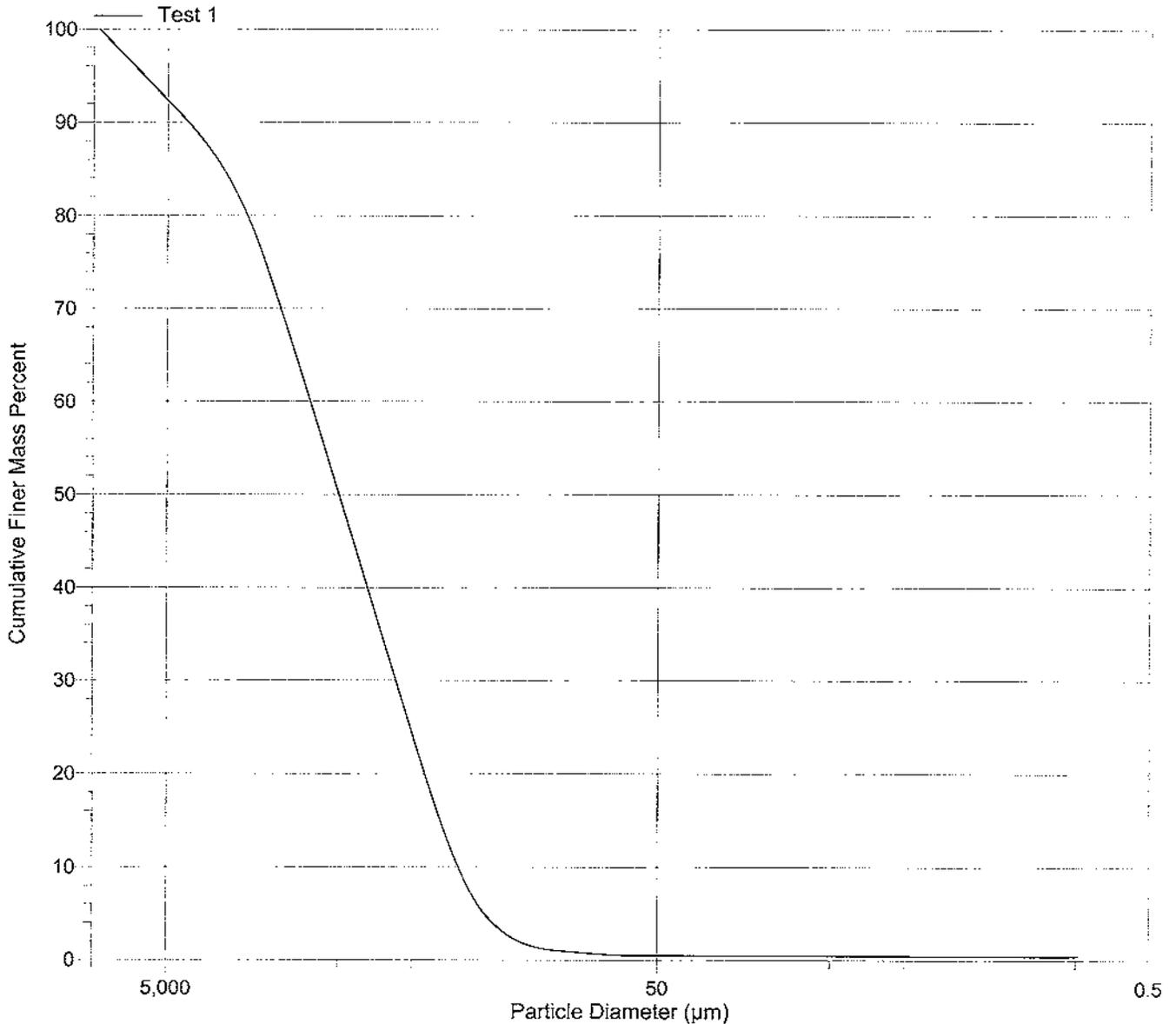
High Diameter (µm)	Cumulative Mass Finer (Percent)	Mass Frequency (Percent)	High Diameter (µm)	Cumulative Mass Finer (Percent)	Mass Frequency (Percent)
9500	100.0	0.0	1145	50.0	5.0
9500	95.0	5.0	1000	45.0	5.0
6257	90.0	5.0	873.6	40.0	5.0
4136	85.0	5.0	764.1	35.0	5.0
2978	80.0	5.0	668.6	30.0	5.0
2376	75.0	5.0	584.9	25.0	5.0
2006	70.0	5.0	511.0	20.0	5.0
1733	65.0	5.0	445.1	15.0	5.0
1506	60.0	5.0	384.0	10.0	5.0
1312	55.0	5.0	323.8	5.0	5.0

Sample ID: MP-15L
Operator: BR
Client: Newfields Northwest
File: C:\...\AOF06\OF06M.SMP
Material/Liquid: Sediment / Water
Measurement Principle: X-Ray monitored gravity sedimentation
Calculation Method: Stokes sedimentation and Beer's law of extinction

Test Number: 1
Analyzed: 1/13/2009 11:52:27AM
Reported: 1/13/2009 12:01:07PM
Liquid Visc: 0.7230 cp
Analysis Temp: 35.0 °C

Analysis Type: High Speed(Adj)
Run Time: 0:05 hrs:min
Sample Density: 2.650 g/cm³
Liquid Density: 0.9941 g/cm³
Base/Full Scale: 128 / 113 kCnts/s
Reynolds Number: 0.30

Cumulative Finer Mass Percent vs. Diameter



Analytical Resources, Inc.

SediGraph III V1.04

Unit 1

Serial Number: 399

Page 1

Sample ID: MP-16U
Operator: BR
Client: Newfields Northwest
File: C:\...\OF06\OF06N.SMP
Material/Liquid: Sediment / Water
Measurement Principle: X-Ray monitored gravity sedimentation
Calculation Method: Stokes sedimentation and Beer's law of extinction

Test Number: 1
Analyzed: 1/13/2009 12:15:48PM
Reported: 1/13/2009 12:24:56PM
Liquid Visc: 0.7229 cp
Analysis Temp: 35.0 °C
Analysis Type: High Speed(Adj)
Run Time: 0:05 hrs:min
Sample Density: 2.650 g/cm³
Liquid Density: 0.9941 g/cm³
Base/Full Scale: 128 / 81 kCnts/s
Reynolds Number: 0.30

Report by Sieve Size

Sieve Name	Aperture Size (µm)	Cumulative Mass Passed (Percent)	Mass Frequency (Percent)	Sieve Name	Aperture Size (µm)	Cumulative Mass Passed (Percent)	Mass Frequency (Percent)
No. 4	4750.0	100.0	0.0	No. 60	250.0	70.4	18.4
No. 10	2000.0	99.9	0.1	No. 120	125.0	31.7	38.7
No. 18	1000.0	98.5	1.4	No. 230	63.0	5.1	26.6
No. 35	500.0	88.8	9.7	No. 635	20.0	4.5	0.6

Analytical Resources, Inc.

SediGraph III V1.04

Unit 1

Serial Number: 399

Page 2

Sample ID: MP-16U
 Operator: BR
 Client: Newfields Northwest
 File: C:\...\AOF06\OF06N.SMP
 Material/Liquid: Sediment / Water
 Measurement Principle: X-Ray monitored gravity sedimentation
 Calculation Method: Stokes sedimentation and Beer's law of extinction

Test Number: 1	Analysis Type: High Speed(Adj)
Analyzed: 1/13/2009 12:15:48PM	Run Time: 0:05 hrs:min
Reported: 1/13/2009 12:24:56PM	Sample Density: 2.650 g/cm ³
Liquid Visc: 0.7229 cp	Liquid Density: 0.9941 g/cm ³
Analysis Temp: 35.0 °C	Base/Full Scale: 128 / 81 kCnts/s
	Reynolds Number: 0.30

Report by Size Table

High Diameter (µm)	Cumulative Mass Finer (Percent)	Mass Frequency (Percent)	High Diameter (µm)	Cumulative Mass Finer (Percent)	Mass Frequency (Percent)
300.0	70.4	6.4	20.00	4.4	0.1
250.0	59.3	11.1	15.00	4.1	0.3
200.0	41.8	17.6	10.00	3.9	0.2
150.0	20.2	21.6	8.000	3.6	0.3
100.0	9.9	10.2	6.000	3.3	0.3
80.00	5.1	4.8	5.000	2.7	0.6
60.00	5.1	0.0	4.000	1.4	1.3
50.00	5.0	0.1	3.000	1.1	0.4
40.00	4.8	0.2	2.000	1.1	0.0
30.00	4.6	0.2	1.500	1.0	0.1
25.00	4.5	0.1			

Analytical Resources, Inc.

SediGraph III V1.04

Unit 1

Serial Number: 399

Page 3

Sample ID: MP-16U
Operator: BR
Client: Newfields Northwest
File: C:\...\OF06\OF06N.SMP
Material/Liquid: Sediment / Water
Measurement Principle: X-Ray monitored gravity sedimentation
Calculation Method: Stokes sedimentation and Beer's law of extinction

Test Number: 1
Analyzed: 1/13/2009 12:15:48PM
Reported: 1/13/2009 12:24:56PM
Liquid Visc: 0.7229 cp
Analysis Temp: 35.0 °C
Analysis Type: High Speed(Adj)
Run Time: 0:05 hrs:min
Sample Density: 2.650 g/cm³
Liquid Density: 0.9941 g/cm³
Base/Full Scale: 128 / 81 kCnts/s
Reynolds Number: 0.30

Report by Mass Percent

High Diameter (µm)	Cumulative Mass Finer (Percent)	Mass Frequency (Percent)	High Diameter (µm)	Cumulative Mass Finer (Percent)	Mass Frequency (Percent)
4750	100.0	0.0	186.0	50.0	5.0
4750	95.0	5.0	171.5	45.0	5.0
713.2	90.0	5.0	158.2	40.0	5.0
534.7	85.0	5.0	145.7	35.0	5.0
411.2	80.0	5.0	133.3	30.0	5.0
334.8	75.0	5.0	120.8	25.0	5.0
283.9	70.0	5.0	109.7	20.0	5.0
247.5	65.0	5.0	99.69	15.0	5.0
221.9	60.0	5.0	90.16	10.0	5.0
202.4	55.0	5.0	80.15	5.0	5.0

Analytical Resources, Inc.

SediGraph III V1.04

Unit 1

Serial Number: 399

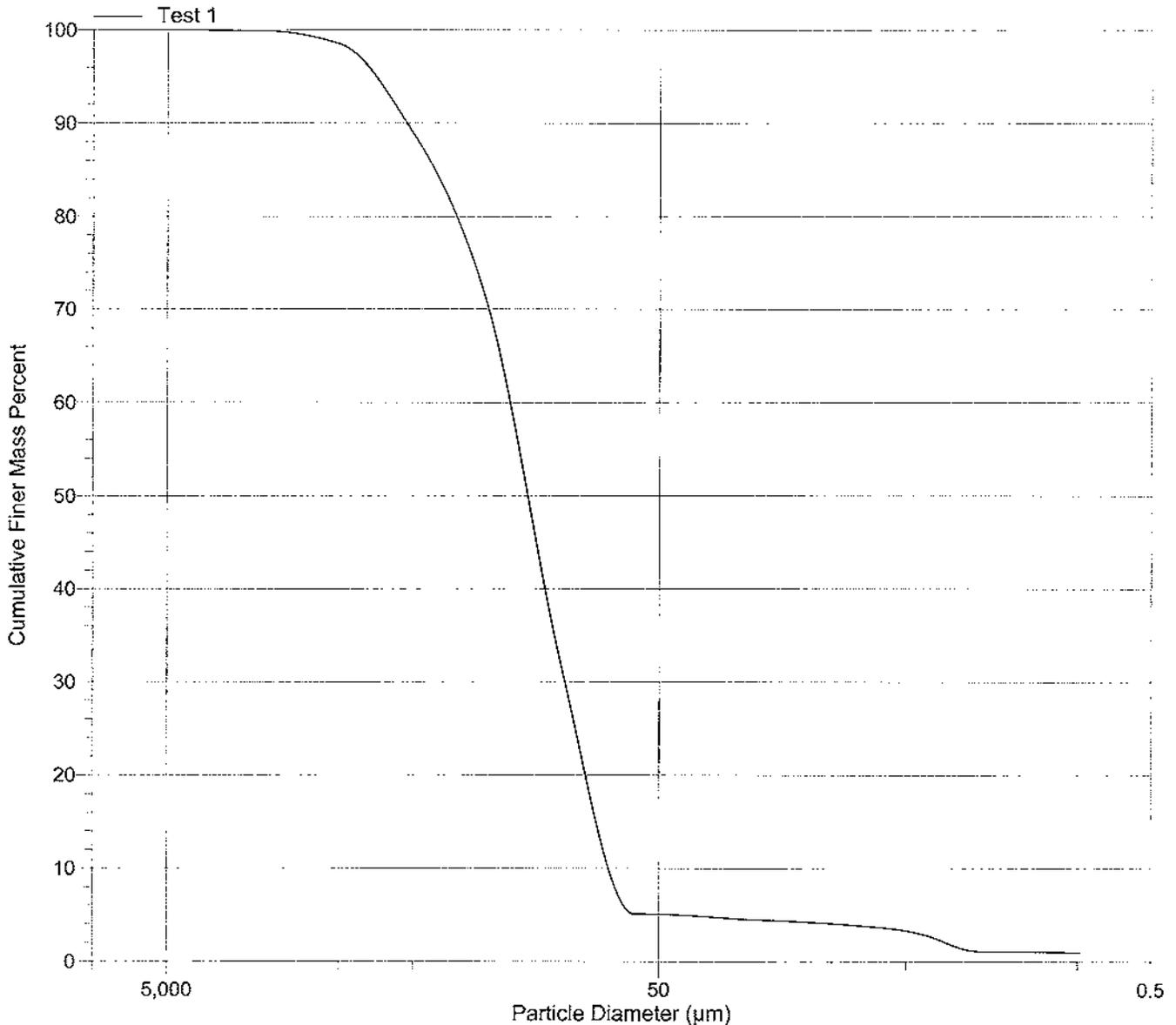
Page 4

Sample ID: MP-16U
Operator: BR
Client: Newfields Northwest
File: C:\...\OF06\OF06N.SMP
Material/Liquid: Sediment / Water
Measurement Principle: X-Ray monitored gravity sedimentation
Calculation Method: Stokes sedimentation and Beer's law of extinction

Test Number: 1
Analyzed: 1/13/2009 12:15:48PM
Reported: 1/13/2009 12:24:56PM
Liquid Visc: 0.7229 cp
Analysis Temp: 35.0 °C

Analysis Type: High Speed(Adj)
Run Time: 0:05 hrs:min
Sample Density: 2.650 g/cm³
Liquid Density: 0.9941 g/cm³
Base/Full Scale: 128 / 81 kCnts/s
Reynolds Number: 0.30

Cumulative Finer Mass Percent vs. Diameter



Analytical Resources, Inc.

SediGraph III V1.04

Unit 1

Serial Number: 399

Page 1

Sample ID: MP-16L
Operator: BR
Client: Newfields Northwest
File: C:\...OF06\OF06O.SMP
Material/Liquid: Sediment / Water
Measurement Principle: X-Ray monitored gravity sedimentation
Calculation Method: Stokes sedimentation and Beer's law of extinction

Test Number: 1
Analyzed: 1/9/2009 4:28:52PM
Reported: 1/13/2009 12:25:51PM
Liquid Visc: 0.7230 cp
Analysis Temp: 35.0 °C
Analysis Type: High Speed(Adj)
Run Time: 0:05 hrs:min
Sample Density: 2.650 g/cm³
Liquid Density: 0.9941 g/cm³
Base/Full Scale: 128 / 103 kCnts/s
Reynolds Number: 0.30

Report by Sieve Size

Sieve Name	Aperture Size (µm)	Cumulative Mass Passed (Percent)	Mass Frequency (Percent)	Sieve Name	Aperture Size (µm)	Cumulative Mass Passed (Percent)	Mass Frequency (Percent)
5/8 in.	16000.0	100.0	0.0	No. 60	250.0	93.9	1.8
No. 4	4750.0	99.6	0.4	No. 120	125.0	93.5	0.4
No. 10	2000.0	99.3	0.2	No. 230	63.0	93.3	0.2
No. 18	1000.0	98.3	1.1	No. 635	20.0	72.0	21.4
No. 35	500.0	95.8	2.5				

Analytical Resources, Inc.

SediGraph III V1.04

Unit 1

Serial Number: 399

Page 2

Sample ID: MP-16L
Operator: BR
Client: Newfields Northwest
File: C:\...\OF06\OF06O.SMP
Material/Liquid: Sediment / Water
Measurement Principle: X-Ray monitored gravity sedimentation
Calculation Method: Stokes sedimentation and Beer's law of extinction

Test Number: 1
Analyzed: 1/9/2009 4:28:52PM
Reported: 1/13/2009 12:25:51PM
Liquid Visc: 0.7230 cp
Analysis Temp: 35.0 °C
Analysis Type: High Speed(Adj)
Run Time: 0:05 hrs:min
Sample Density: 2.650 g/cm³
Liquid Density: 0.9941 g/cm³
Base/Full Scale: 128 / 103 kCnts/s
Reynolds Number: 0.30

Report by Size Table

High Diameter (µm)	Cumulative Mass Finer (Percent)	Mass Frequency (Percent)	High Diameter (µm)	Cumulative Mass Finer (Percent)	Mass Frequency (Percent)
300.0	93.9	0.3	20.00	71.5	0.5
250.0	93.7	0.2	15.00	62.0	9.5
200.0	93.6	0.2	10.00	56.8	5.2
150.0	93.5	0.1	8.000	50.1	6.7
100.0	93.4	0.1	6.000	46.1	4.0
80.00	93.3	0.1	5.000	39.9	6.2
60.00	92.3	1.0	4.000	29.9	10.0
50.00	86.2	6.1	3.000	18.2	11.7
40.00	78.7	7.5	2.000	6.6	11.6
30.00	76.8	1.9	1.500	0.0	6.6
25.00	72.0	4.8			

Analytical Resources, Inc.

SediGraph III V1.04

Unit 1

Serial Number: 399

Page 3

Sample ID: MP-16L
Operator: BR
Client: Newfields Northwest
File: C:\...OF06\OF06O.SMP
Material/Liquid: Sediment / Water
Measurement Principle: X-Ray monitored gravity sedimentation
Calculation Method: Stokes sedimentation and Beer's law of extinction

Test Number: 1
Analyzed: 1/9/2009 4:28:52PM
Reported: 1/13/2009 12:25:51PM
Liquid Visc: 0.7230 cp
Analysis Temp: 35.0 °C
Analysis Type: High Speed(Adj)
Run Time: 0:05 hrs:min
Sample Density: 2.650 g/cm³
Liquid Density: 0.9941 g/cm³
Base/Full Scale: 128 / 103 kCnts/s
Reynolds Number: 0.30

Report by Mass Percent

High Diameter (µm)	Cumulative Mass Finer (Percent)	Mass Frequency (Percent)	High Diameter (µm)	Cumulative Mass Finer (Percent)	Mass Frequency (Percent)
9500	100.0	0.0	7.176	50.0	5.0
9500	95.0	5.0	5.983	45.0	5.0
393.4	90.0	5.0	4.720	40.0	5.0
44.61	85.0	5.0	4.011	35.0	5.0
38.82	80.0	5.0	3.486	30.0	5.0
33.35	75.0	5.0	3.012	25.0	5.0
23.15	70.0	5.0	2.552	20.0	5.0
13.37	65.0	5.0	2.096	15.0	5.0
10.94	60.0	5.0	1.861	10.0	5.0
9.381	55.0	5.0	1.660	5.0	5.0

Analytical Resources, Inc.

SediGraph III V1.04

Unit 1

Serial Number: 399

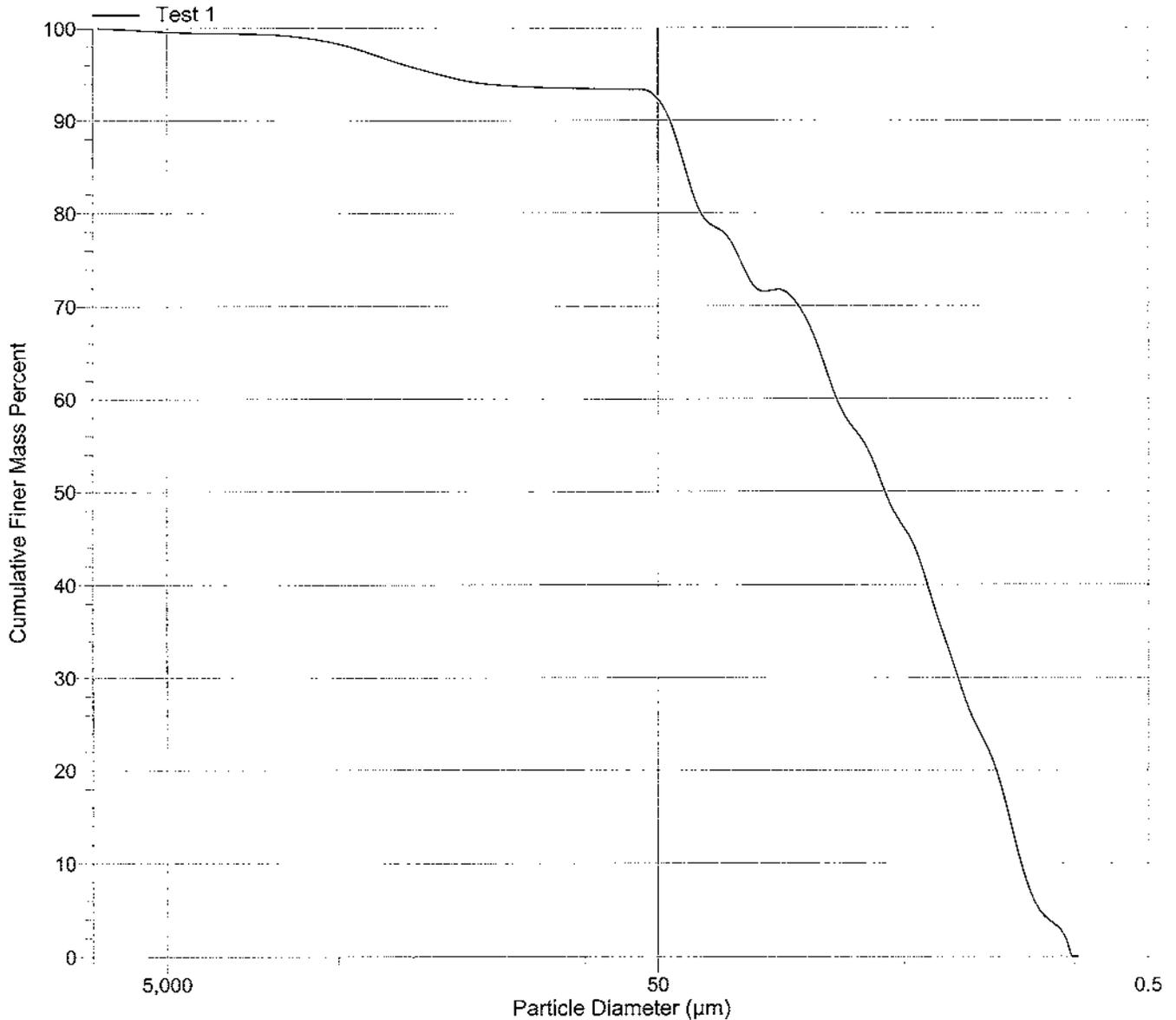
Page 4

Sample ID: MP-16L
Operator: BR
Client: Newfields Northwest
File: C:\...\OF06\OF06O.SMP
Material/Liquid: Sediment / Water
Measurement Principle: X-Ray monitored gravity sedimentation
Calculation Method: Stokes sedimentation and Beer's law of extinction

Test Number: 1
Analyzed: 1/9/2009 4:28:52PM
Reported: 1/13/2009 12:25:51PM
Liquid Visc: 0.7230 cp
Analysis Temp: 35.0 °C

Analysis Type: High Speed(Adj)
Run Time: 0:05 hrs:min
Sample Density: 2.650 g/cm³
Liquid Density: 0.9941 g/cm³
Base/Full Scale: 128 / 103 kCnts/s
Reynolds Number: 0.30

Cumulative Finer Mass Percent vs. Diameter



Newfields Northwest
Marina Park

Apparent Grain Size Distribution Summary
Percent Finer Than Indicated Size

Sample No.	Gravel			Very Coarse Sand	Coarse Sand	Medium Sand	Fine Sand	Very Fine Sand	Silt				Clay		
	-3	-2	-1						5	6	7	8	9	10	
Phi Size															
Sieve Size (microns)	3/8"	#4 (4750)	#10 (2000)	#18 (1000)	#35 (500)	#60 (250)	#120 (125)	#230 (63)							
WB-08-SS-010	100.0	100.0	99.8	99.1	98.0	97.3	96.8	95.2	31.00	15.60	7.80	3.90	2.00	1.00	
WB-08-SS-010	100.0	100.0	99.9	99.6	99.0	98.4	97.9	96.3	86.7	65.0	44.6	26.7	15.1	7.6	
WB-08-SS-010	100.0	100.0	100.0	97.8	95.5	94.4	93.3	90.3	86.0	65.1	44.8	26.5	15.3	7.8	
MP10U COMP	100.0	94.6	92.9	86.8	69.5	51.2	25.5	9.9	81.8	64.0	43.7	26.3	14.5	6.9	
MP14U COMP	100.0	98.9	92.5	69.6	39.1	20.6	15.2	12.9	9.3	8.5	7.4	6.1	4.9	3.7	
MP12U COMP	100.0	93.9	91.8	83.4	64.8	45.4	23.6	13.2	12.6	12.2	10.9	9.0	7.5	5.8	
									13.1	12.2	10.6	8.7	6.9	5.0	

Notes to the Testing:

- Organic matter was not removed prior to testing, thus the reported values are the "apparent" grain size distribution. See narrative for discussion of the testing.

Newfields Northwest
Marina Park

Apparent Grain Size Distribution Summary
Percent Retained in Each Size Fraction

Sample No.	Gravel	Very Coarse Sand	Coarse Sand	Medium Sand	Fine Sand	Very Fine Sand	Coarse Silt	Medium Silt	Fine Silt	Very Fine Silt	Clay			Total Fines
											8 to 9	9 to 10	< 10	
Phi Size	> -1	-1 to 0	0 to 1	1 to 2	2 to 3	3 to 4	4 to 5	5 to 6	6 to 7	7 to 8	8 to 9	9 to 10	< 10	< 4
Sieve Size (microns)	> #10 (2000)	10 to 18 (2000-10000)	18-35 (10000-5000)	35-60 (5000-2500)	60-120 (2500-1250)	120-230 (1250-625)	62.5-31.0	31.0-15.6	15.6-7.8	7.8-3.9	3.9-2.0	2.0-1.0	< 1.0	< 230 (-62)
WB-08-SS-010	0.2	0.6	1.1	0.7	0.6	1.6	8.5	21.6	20.5	17.9	11.6	7.5	7.6	95.2
WB-08-SS-010	0.1	0.3	0.6	0.6	0.6	1.6	10.3	20.8	20.4	18.2	11.3	7.5	7.8	96.3
WB-08-SS-010	0.0	2.2	2.3	1.1	1.1	3.0	8.5	17.8	20.3	17.4	11.8	7.7	6.9	90.3
MP10U COMP	7.1	6.2	17.2	18.4	25.7	15.6	0.7	0.8	1.1	1.3	1.2	1.2	3.7	9.9
MP14U COMP	7.5	22.9	30.5	18.5	5.4	2.3	0.3	0.5	1.3	1.9	1.5	1.8	5.8	12.9
MP12U COMP	8.2	8.4	18.5	19.4	21.8	10.5	0.1	0.8	1.6	2.0	1.7	1.9	5.0	13.2

Notes to the Testing:

1. Organic matter was not removed prior to testing, thus the reported values are the "apparent" grain size distribution. See narrative for discussion of the testing.

QA SUMMARY

Client:	Newfields Northwest	Project No.:	Marina Park
ARI Trip. Sample ID:	OG521	Batch No.:	OG68-1
Client Trip. Sample ID:	WB-08-SS-010	Page:	1 of 1

Sample ID	Relative Standard Deviation, By Phi Size													
	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10
WB-08-SS-010	100.0	100.0	99.8	99.1	98.0	97.3	96.8	95.2	86.7	65.0	44.6	26.7	15.1	7.6
WB-08-SS-010	100.0	100.0	99.9	99.6	99.0	98.4	97.9	96.3	86.0	65.1	44.8	26.5	15.3	7.8
WB-08-SS-010	100.0	100.0	100.0	97.8	95.5	94.4	93.3	90.3	81.8	64.0	43.7	26.3	14.5	6.9
AVE	NA	100.00	99.90	98.86	97.51	96.71	95.98	93.91	84.82	64.73	44.36	26.52	14.98	7.41
STDEV	NA	0.00	0.13	0.92	1.82	2.09	2.38	3.16	2.65	0.64	0.55	0.22	0.39	0.47
%RSD	NA	0.00	0.13	0.93	1.87	2.16	2.48	3.36	3.13	1.00	1.25	0.82	2.57	6.32

The Triplicate Applies To The Following Samples

Client ID	Date Sampled	Date Extracted	Date Complete	QA Ratio (95-105)	Data Qualifiers	Pipette Portion (5.0-25.0g)
WB-08-SS-010	1/6/2009	1/14/2009	1/16/2009	103.9		9.3
WB-08-SS-010	1/6/2009	1/14/2009	1/16/2009	103.7		9.9
WB-08-SS-010	1/6/2009	1/14/2009	1/16/2009	104.2		9.0
MP10U COMP	12/11/2008	1/14/2009	1/22/2009	98.7		8.8
MP14U COMP	12/11/2008	1/14/2009	1/22/2009	99.2		7.9
MP12U COMP	12/11/2008	1/14/2009	1/22/2009	99.5		10.3

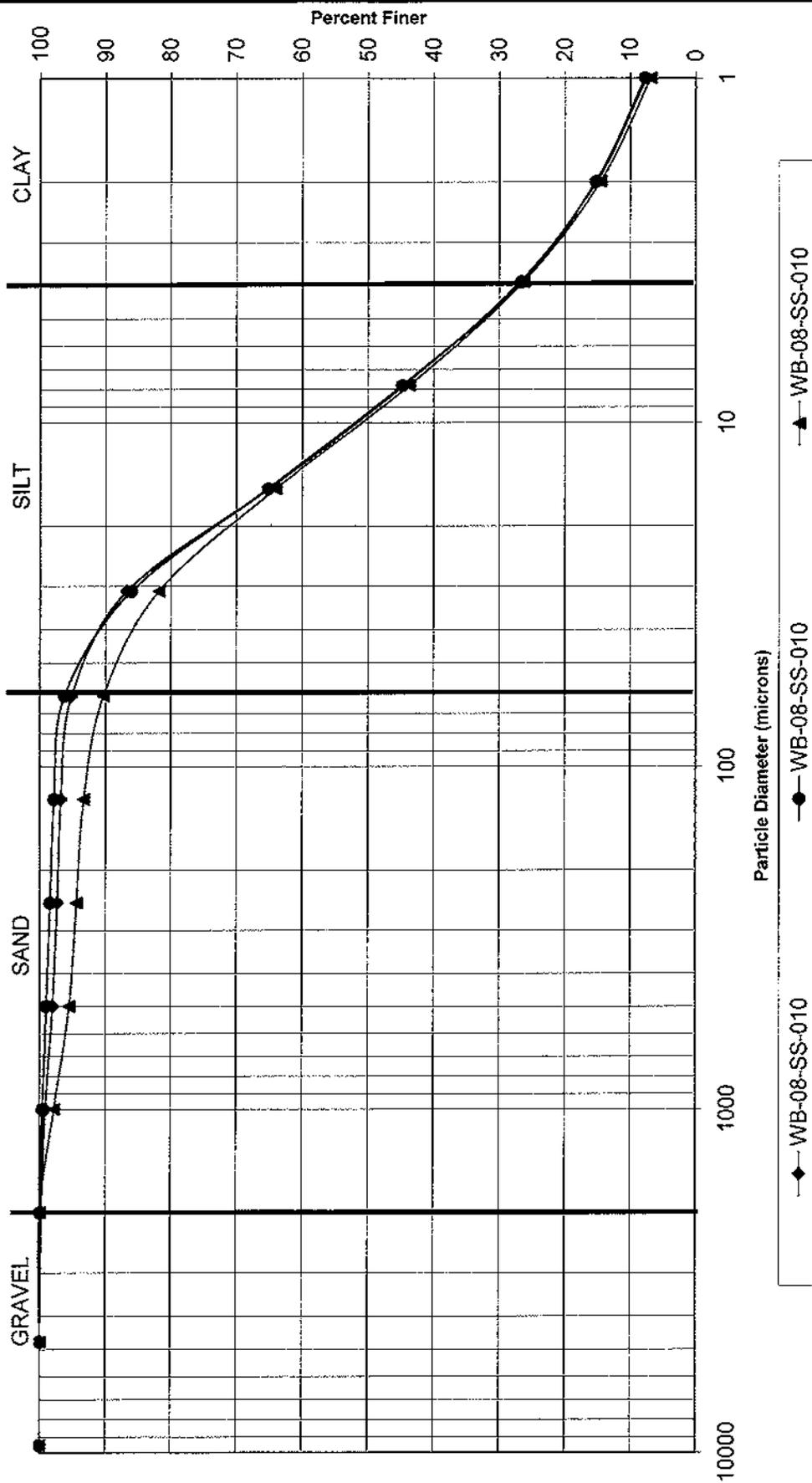
* ARI Internal QA limits = 95-105%

Notes to the Testing:

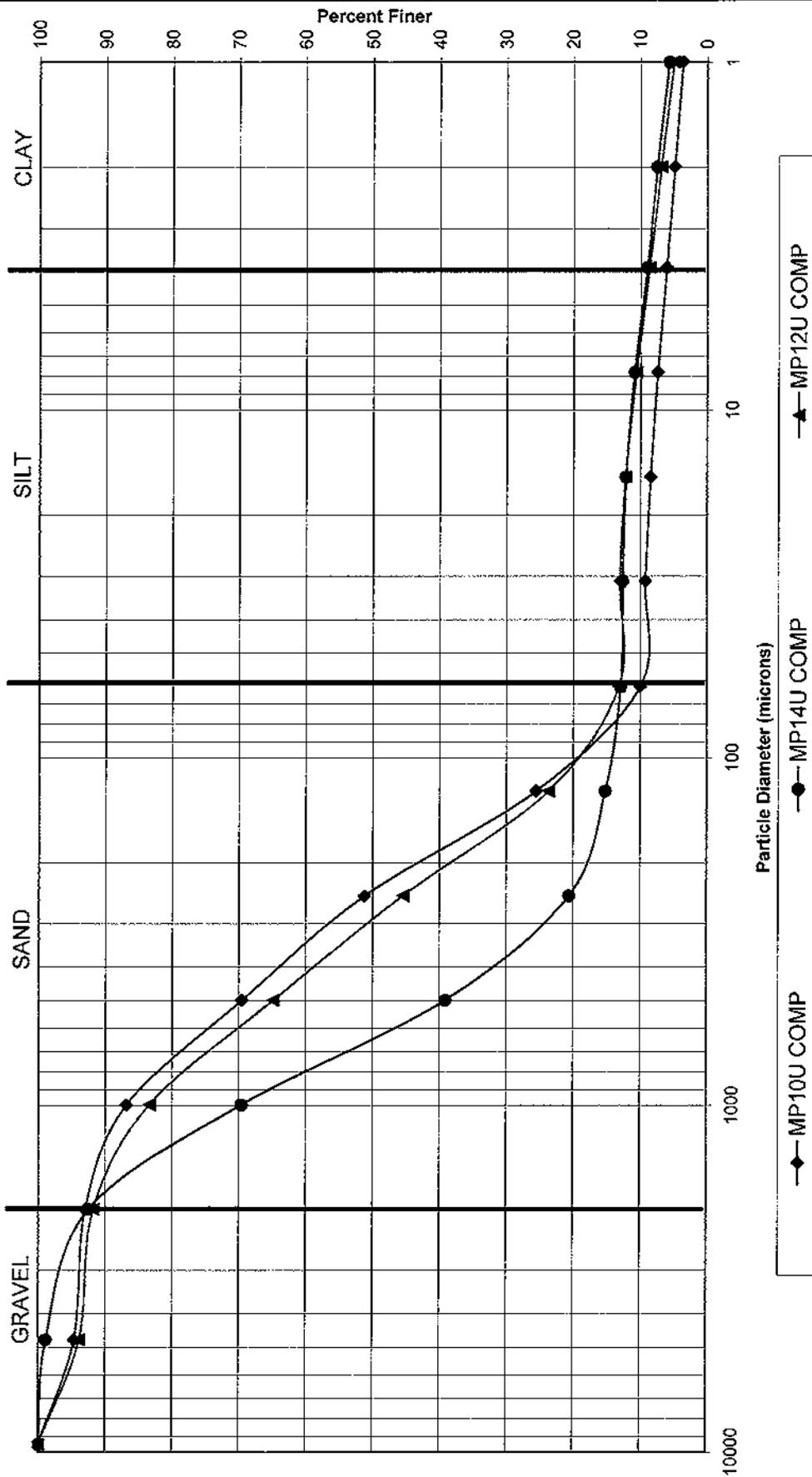
1. Organic matter was not removed prior to testing, thus the reported values are the "apparent" grain size distribution. See narrative for discussion of the testing.

PSEP Grain Size Distribution

Triplicate Sample Plot



PSEP Grain Size Distribution



SAMPLE RESULTS-CONVENTIONALS
OF06-Newfields Northwest



Matrix: Sediment
Data Release Authorized: *MP*
Reported: 01/09/09

Project: Marina Park
Event: NA
Date Sampled: 12/08/08
Date Received: 12/17/08

Client ID: Comp CU
ARI ID: 08-34190 OF06A

Analyte	Date	Method	Units	RL	Sample
Total Solids	12/23/08 122308#1	EPA 160.3	Percent	0.01	76.20
Total Organic Carbon	01/08/09 010809#1	Plumb, 1981	Percent	0.020	0.685
HEM Oil & Grease	01/07/09 010709#1	9071 B	mg/kg	262	< 262 U
HEM-ST NP Oil & Grease	01/07/09	9071 B	mg/kg	262	< 262 U
HEM Polar Oil & Grease	01/07/09	9071 B	mg/kg	262	< 262 U

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
OF06-Newfields Northwest



Matrix: Sediment
Data Release Authorized *JMP*
Reported: 01/09/09

Project: Marina Park
Event: NA
Date Sampled: 12/08/08
Date Received: 12/17/08

Client ID: Comp CL
ARI ID: 08-34191 OF06B

Analyte	Date	Method	Units	RL	Sample
Total Solids	12/23/08 122308#1	EPA 160.3	Percent	0.01	87.40
Preserved Total Solids	12/23/08 122308#1	EPA 160.3	Percent	0.01	85.20
Sulfide	12/23/08 122308#1	EPA 376.2	mg/kg	1.18	7.09
Total Organic Carbon	01/08/09 010809#1	Plumb, 1981	Percent	0.020	0.055
HEM Oil & Grease	01/07/09 010709#1	9071 B	mg/kg	221	< 221 U
HEM-ST NP Oil & Grease	01/07/09	9071 B	mg/kg	221	< 221 U
HEM Polar Oil & Grease	01/07/09	9071 B	mg/kg	221	< 221 U

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
OF06-Newfields Northwest



Matrix: Sediment
Data Release Authorized: *[Signature]*
Reported: 01/09/09

Project: Marina Park
Event: NA
Date Sampled: 12/08/08
Date Received: 12/17/08

Client ID: LA-3 Ref
ARI ID: 08-34192 OF06C

Analyte	Date	Method	Units	RL	Sample
Total Solids	12/23/08 122308#1	EPA 160.3	Percent	0.01	43.50
Total Organic Carbon	01/08/09 010809#1	Plumb, 1981	Percent	0.020	1.82
HEM Oil & Grease	01/07/09 010709#1	9071 B	mg/kg	450	< 450 U
HEM-ST NP Oil & Grease	01/07/09	9071 B	mg/kg	450	< 450 U
HEM Polar Oil & Grease	01/07/09	9071 B	mg/kg	450	< 450 U

RL Analytical reporting limit
U Undetected at reported detection limit

METHOD BLANK RESULTS-CONVENTIONALS
OF06-Newfields Northwest



Matrix: Sediment
Data Release Authorized: *MR*
Reported: 01/09/09

Project: Marina Park
Event: NA
Date Sampled: NA
Date Received: NA

Analyte	Date	Units	Blank
Total Solids	12/23/08	Percent	< 0.01 U
Preserved Total Solids	12/23/08	Percent	< 0.01 U
Sulfide	12/23/08	mg/kg	< 0.05 U
Total Organic Carbon	01/08/09	Percent	< 0.020 U
HEM Oil & Grease	01/07/09	mg/kg	< 200 U
HEM-ST NP Oil & Grease	01/07/09	mg/kg	< 200 U
HEM Polar Oil & Grease	01/07/09	mg/kg	< 200

LAB CONTROL RESULTS-CONVENTIONALS
OF06-Newfields Northwest



Matrix: Sediment
Data Release Authorized *NR*
Reported: 01/09/09

Project: Marina Park
Event: NA
Date Sampled: NA
Date Received: NA

Analyte	Date	Units	LCS	Spike Added	Recovery
Sulfide	12/23/08	mg/kg	4.58	6.36	72.0%
Total Organic Carbon	01/08/09	Percent	0.468	0.500	93.6%

STANDARD REFERENCE RESULTS-CONVENTIONALS
OF06-Newfields Northwest



Matrix: Sediment
Data Release Authorized: 
Reported: 01/09/09

Project: Marina Park
Event: NA
Date Sampled: NA
Date Received: NA

Analyte/SRM ID	Date	Units	SRM	True Value	Recovery
Total Organic Carbon NIST #8704	01/08/09	Percent	3.36	3.35	100.3%
HEM Oil & Grease Env. Exp. #104629	01/07/09	mg/kg	8,090	8,000	101.1%

REPLICATE RESULTS-CONVENTIONALS
 OF06-Newfields Northwest



Matrix: Sediment
 Data Release Authorized:
 Reported: 01/09/09

Project: Marina Park
 Event: NA
 Date Sampled: 12/08/08
 Date Received: 12/17/08

Analyte	Date	Units	Sample	Replicate(s)	RPD/RSD
ARI ID: OF06A Client ID: Comp CU					
Total Solids	12/23/08	Percent	76.20	76.60 76.80	0.4%
Total Organic Carbon	01/08/09	Percent	0.685	0.684 0.682	0.2%
ARI ID: OF06B Client ID: Comp CL					
Preserved Total Solids	12/23/08	Percent	85.20	85.20 85.00	0.1%
Sulfide	12/23/08	mg/kg	7.09	8.56	18.8%
HEM Oil & Grease	01/07/09	mg/kg	< 221	< 225 < 224	NA
HEM-ST NP Oil & Grease	01/07/09	mg/kg	< 221	< 225 < 224	NA

MS/MSD RESULTS-CONVENTIONALS
OF06-Newfields Northwest



Matrix: Sediment
Data Release Authorized:
Reported: 01/09/09

Project: Marina Park
Event: NA
Date Sampled: 12/08/08
Date Received: 12/17/08

Analyte	Date	Units	Sample	Spike	Spike Added	Recovery
ARI ID: OF06B Client ID: Comp CL						
Sulfide	12/23/08	mg/kg	7.09	125	141	83.6%
HEM Oil & Grease	01/07/09	mg/kg	< 221	8,670	9,030	96.0%



INORGANICS ANALYSIS DATA SHEET

TOTAL METALS

Page 1 of 1

Sample ID: Comp CU
SAMPLE

Lab Sample ID: OF06A

QC Report No: OF06-Newfields Northwest

LIMS ID: 08-34190

Project: Marina Park

Matrix: Sediment

Data Release Authorized: 

Date Sampled: 12/08/08

Reported: 01/08/09

Date Received: 12/17/08

Percent Total Solids: 77.9%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry	Q
3050B	12/29/08	200.8	01/02/09	7440-38-2	Arsenic	0.2	3.7	
3050B	12/29/08	200.8	01/02/09	7440-43-9	Cadmium	0.2	0.4	
3050B	12/29/08	200.8	01/02/09	7440-47-3	Chromium	0.6	12.4	
3050B	12/29/08	200.8	01/02/09	7440-50-8	Copper	0.6	18.3	
3050B	12/29/08	200.8	01/02/09	7439-92-1	Lead	1	9	
CLP	12/29/08	7471A	12/31/08	7439-97-6	Mercury	0.05	0.36	
3050B	12/29/08	200.8	01/06/09	7440-02-0	Nickel	0.6	9.2	
3050B	12/29/08	200.8	01/02/09	7782-49-2	Selenium	0.6	0.6	U
3050B	12/29/08	200.8	01/02/09	7440-22-4	Silver	0.2	0.2	U
3050B	12/29/08	200.8	01/02/09	7440-66-6	Zinc	5	44	

U-Analyte undetected at given RL
RL-Reporting Limit



INORGANICS ANALYSIS DATA SHEET

TOTAL METALS

Page 1 of 1

Sample ID: Comp CU
DUPLICATE

Lab Sample ID: OF06A

LIMS ID: 08-34190

Matrix: Sediment

Data Release Authorized: *gh*

Reported: 01/08/09

QC Report No: OF06-Newfields Northwest

Project: Marina Park

Date Sampled: 12/08/08

Date Received: 12/17/08

MATRIX DUPLICATE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample	Duplicate	RPD	Control Limit	Q
Arsenic	200.8	3.7	3.6	2.7%	+/- 20%	
Cadmium	200.8	0.4	0.2 U	66.7%	+/- 0.2	L
Chromium	200.8	12.4	12.1	2.4%	+/- 20%	
Copper	200.8	18.3	17.1	6.8%	+/- 20%	
Lead	200.8	9	9	0.0%	+/- 20%	
Mercury	7471A	0.36	0.72	66.7%	+/- 20%	*
Nickel	200.8	9.2	8.9	3.3%	+/- 20%	
Selenium	200.8	0.6 U	0.6 U	0.0%	+/- 0.6	L
Silver	200.8	0.2 U	0.2 U	0.0%	+/- 0.2	L
Zinc	200.8	44	40	9.5%	+/- 20%	

Reported in mg/kg-dry

*-Control Limit Not Met

L-RPD Invalid, Limit = Detection Limit

INORGANICS ANALYSIS DATA SHEET

TOTAL METALS

Page 1 of 1

Sample ID: Comp CU
MATRIX SPIKE

Lab Sample ID: OF06A

LIMS ID: 08-34190

Matrix: Sediment

Data Release Authorized: 

Reported: 01/08/09

QC Report No: OF06-Newfields Northwest

Project: Marina Park

Date Sampled: 12/08/08

Date Received: 12/17/08

MATRIX SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample	Spike	Spike Added	% Recovery	Q
Arsenic	200.8	3.7	32.8	31.3	93.0%	
Cadmium	200.8	0.4	28.6	31.3	90.1%	
Chromium	200.8	12.4	39.4	31.3	86.3%	
Copper	200.8	18.3	45.2	31.3	85.9%	
Lead	200.8	9	40	31.3	99.0%	
Mercury	7471A	0.36	0.94	0.510	114%	
Nickel	200.8	9.2	41.9	31.3	104%	
Selenium	200.8	0.6 U	93.7	100	93.7%	
Silver	200.8	0.2 U	16.2	31.3	51.8%	N
Zinc	200.8	44	142	100	98.0%	

Reported in mg/kg-dry

N-Control Limit Not Met

H-% Recovery Not Applicable, Sample Concentration Too High

NA-Not Applicable, Analyte Not Spiked

Percent Recovery Limits: 75-125%



INORGANICS ANALYSIS DATA SHEET

TOTAL METALS

Sample ID: LAB CONTROL

Page 1 of 1

Lab Sample ID: OF06LCS

QC Report No: OF06-Newfields Northwest

LIMS ID: 08-34191

Project: Marina Park

Matrix: Sediment

Data Release Authorized:

Date Sampled: NA

Reported: 01/08/09

Date Received: NA

BLANK SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Spike Found	Spike Added	% Recovery	Q
Arsenic	200.8	24.4	25.0	97.6%	
Cadmium	200.8	23.5	25.0	94.0%	
Chromium	200.8	24.8	25.0	99.2%	
Copper	200.8	23.1	25.0	92.4%	
Lead	200.8	26	25	104%	
Mercury	7471A	1.01	1.00	101%	
Nickel	200.8	26.8	25.0	107%	
Selenium	200.8	77.4	80.0	96.8%	
Silver	200.8	25.2	25.0	101%	
Zinc	200.8	78	80	97.5%	

Reported in mg/kg-dry

N-Control limit not met

NA-Not Applicable, Analyte Not Spiked

Control Limits: 80-120%



INORGANICS ANALYSIS DATA SHEET

TOTAL METALS

Page 1 of 1

Sample ID: Comp CL
SAMPLE

Lab Sample ID: OF06B

LIMS ID: 08-34191

Matrix: Sediment

Data Release Authorized: 

Reported: 01/08/09

QC Report No: OF06-Newfields Northwest

Project: Marina Park

Date Sampled: 12/08/08

Date Received: 12/17/08

Percent Total Solids: 84.4%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry	Q
3050B	12/29/08	200.8	01/02/09	7440-38-2	Arsenic	0.2	2.1	
3050B	12/29/08	200.8	01/02/09	7440-43-9	Cadmium	0.2	0.2	U
3050B	12/29/08	200.8	01/02/09	7440-47-3	Chromium	0.6	2.8	
3050B	12/29/08	200.8	01/02/09	7440-50-8	Copper	0.6	1.2	
3050B	12/29/08	200.8	01/02/09	7439-92-1	Lead	1	1	U
CLP	12/29/08	7471A	12/31/08	7439-97-6	Mercury	0.05	0.05	U
3050B	12/29/08	200.8	01/06/09	7440-02-0	Nickel	0.6	1.9	
3050B	12/29/08	200.8	01/02/09	7782-49-2	Selenium	0.6	0.6	U
3050B	12/29/08	200.8	01/02/09	7440-22-4	Silver	0.2	0.2	U
3050B	12/29/08	200.8	01/02/09	7440-66-6	Zinc	5	6	

U-Analyte undetected at given RL

RL-Reporting Limit



INORGANICS ANALYSIS DATA SHEET

TOTAL METALS
Page 1 of 1

Sample ID: LA-3 Ref
SAMPLE

Lab Sample ID: OF06C
LIMS ID: 08-34192
Matrix: Sediment
Data Release Authorized: *[Signature]*
Reported: 01/08/09

QC Report No: OF06-Newfields Northwest
Project: Marina Park

Date Sampled: 12/08/08
Date Received: 12/17/08

Percent Total Solids: 44.0%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry	Q
3050B	12/29/08	200.8	01/02/09	7440-38-2	Arsenic	0.4	5.5	
3050B	12/29/08	200.8	01/02/09	7440-43-9	Cadmium	0.4	0.9	
3050B	12/29/08	200.8	01/02/09	7440-47-3	Chromium	1	40	
3050B	12/29/08	200.8	01/02/09	7440-50-8	Copper	1	22	
3050B	12/29/08	200.8	01/02/09	7439-92-1	Lead	2	13	
CLP	12/29/08	7471A	12/31/08	7439-97-6	Mercury	0.09	0.10	
3050B	12/29/08	200.8	01/07/09	7440-02-0	Nickel	1	24	
3050B	12/29/08	200.8	01/02/09	7782-49-2	Selenium	1	1	U
3050B	12/29/08	200.8	01/02/09	7440-22-4	Silver	0.4	0.4	U
3050B	12/29/08	200.8	01/02/09	7440-66-6	Zinc	8	83	

U-Analyte undetected at given RL
RL-Reporting Limit

INORGANICS ANALYSIS DATA SHEET

TOTAL METALS

Page 1 of 1

Sample ID: MP-10L
SAMPLE

Lab Sample ID: OF06E

LIMS ID: 08-34194

Matrix: Sediment

Data Release Authorized: 

Reported: 01/08/09

QC Report No: OF06-Newfields Northwest

Project: Marina Park

Date Sampled: 12/08/08

Date Received: 12/17/08

Percent Total Solids: 61.7%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry	Q
CLP	12/29/08	7471A	12/31/08	7439-97-6	Mercury	0.06	0.06	U

U-Analyte undetected at given RL
RL-Reporting Limit

INORGANICS ANALYSIS DATA SHEET

TOTAL METALS

Page 1 of 1

Sample ID: MP-12L
SAMPLE

Lab Sample ID: OF06G

LIMS ID: 08-34196

Matrix: Sediment

Data Release Authorized: 

Reported: 01/08/09

QC Report No: OF06-Newfields Northwest

Project: Marina Park

Date Sampled: 12/08/08

Date Received: 12/17/08

Percent Total Solids: 59.0%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry	Q
CLP	12/29/08	7471A	12/31/08	7439-97-6	Mercury	0.06	0.07	

U-Analyte undetected at given RL

RL-Reporting Limit



INORGANICS ANALYSIS DATA SHEET

TOTAL METALS
Page 1 of 1

Sample ID: MP-13U
SAMPLE

Lab Sample ID: OF06H
LIMS ID: 08-34197
Matrix: Sediment
Data Release Authorized: 
Reported: 01/08/09

QC Report No: OF06-Newfields Northwest
Project: Marina Park

Date Sampled: 12/08/08
Date Received: 12/17/08

Percent Total Solids: 76.4%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry	Q
CLP	12/29/08	7471A	12/31/08	7439-97-6	Mercury	0.05	1.11	

U-Analyte undetected at given RL
RL-Reporting Limit



INORGANICS ANALYSIS DATA SHEET

TOTAL METALS

Sample ID: MP-13L

Page 1 of 1

SAMPLE

Lab Sample ID: OF06I

QC Report No: OF06-Newfields Northwest

LIMS ID: 08-34198

Project: Marina Park

Matrix: Sediment

Data Release Authorized

Date Sampled: 12/08/08

Reported: 01/08/09

Date Received: 12/17/08

Percent Total Solids: 85.5%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry	Q
CLP	12/29/08	7471A	12/31/08	7439-97-6	Mercury	0.05	0.05	U

U-Analyte undetected at given RL

RL-Reporting Limit

INORGANICS ANALYSIS DATA SHEET

TOTAL METALS
Page 1 of 1

Sample ID: MP-140 L mislabelled
SAMPLE

Lab Sample ID: OF06J
LIMS ID: 08-34199
Matrix: Sediment
Data Release Authorized:
Reported: 01/08/09

QC Report No: OF06-Newfields Northwest
Project: Marina Park
Date Sampled: 12/08/08
Date Received: 12/17/08

Percent Total Solids: 84.2%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry	Q
CLP	12/29/08	7471A	12/31/08	7439-97-6	Mercury	0.06	0.06	U

U-Analyte undetected at given RL
RL-Reporting Limit



INORGANICS ANALYSIS DATA SHEET

TOTAL METALS

Page 1 of 1

Sample ID: MP-15U
SAMPLE

Lab Sample ID: OF06L

QC Report No: OF06-Newfields Northwest

LIMS ID: 08-34201

Project: Marina Park

Matrix: Sediment

Data Release Authorized: *[Signature]*

Date Sampled: 12/08/08

Reported: 01/08/09

Date Received: 12/17/08

Percent Total Solids: 61.1%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry	Q
CLP	12/29/08	7471A	12/31/08	7439-97-6	Mercury	0.06	3.35	

U-Analyte undetected at given RL
RL-Reporting Limit



INORGANICS ANALYSIS DATA SHEET

TOTAL METALS
Page 1 of 1

Sample ID: MP-15L
SAMPLE

Lab Sample ID: OF06M
LIMS ID: 08-34202
Matrix: Sediment
Data Release Authorized: *[Signature]*
Reported: 01/08/09

QC Report No: OF06-Newfields Northwest
Project: Marina Park

Date Sampled: 12/08/08
Date Received: 12/17/08

Percent Total Solids: 90.8%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry	Q
CLP	12/29/08	7471A	12/31/08	7439-97-6	Mercury	0.05	0.05	U

U-Analyte undetected at given RL
RL-Reporting Limit



INORGANICS ANALYSIS DATA SHEET

TOTAL METALS

Page 1 of 1

Sample ID: MP-16U
SAMPLE

Lab Sample ID: OF06N

QC Report No: OF06-Newfields Northwest

LIMS ID: 08-34203

Project: Marina Park

Matrix: Sediment

Data Release Authorized: *[Signature]*

Date Sampled: 12/08/08

Reported: 01/08/09

Date Received: 12/17/08

Percent Total Solids: 81.4%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry	Q
CLP	12/29/08	7471A	12/31/08	7439-97-6	Mercury	0.05	0.07	

U-Analyte undetected at given RL

RL-Reporting Limit



INORGANICS ANALYSIS DATA SHEET

TOTAL METALS

Page 1 of 1

Sample ID: MP-16L
SAMPLE

Lab Sample ID: OF060

LIMS ID: 08-34204

Matrix: Sediment

Data Release Authorized: 

Reported: 01/08/09

QC Report No: OF06-Newfields Northwest

Project: Marina Park

Date Sampled: 12/08/08

Date Received: 12/17/08

Percent Total Solids: 86.9%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry	Q
CLP	12/29/08	7471A	12/31/08	7439-97-6	Mercury	0.05	0.05	U

U-Analyte undetected at given RL

RL-Reporting Limit



INORGANICS ANALYSIS DATA SHEET

TOTAL METALS

Sample ID: METHOD BLANK

Page 1 of 1

Lab Sample ID: OF06MB

QC Report No: OF06-Newfields Northwest

LIMS ID: 08-34191

Project: Marina Park

Matrix: Sediment

Data Release Authorized:

Date Sampled: NA

Reported: 01/08/09

Date Received: NA

Percent Total Solids: NA

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry	Q
3050B	12/29/08	200.8	01/02/09	7440-38-2	Arsenic	0.2	0.2	U
3050B	12/29/08	200.8	01/02/09	7440-43-9	Cadmium	0.2	0.2	U
3050B	12/29/08	200.8	01/02/09	7440-47-3	Chromium	0.5	0.5	U
3050B	12/29/08	200.8	01/02/09	7440-50-8	Copper	0.5	0.5	U
3050B	12/29/08	200.8	01/02/09	7439-92-1	Lead	1	1	U
CLP	12/29/08	7471A	12/31/08	7439-97-6	Mercury	0.05	0.05	U
3050B	12/29/08	200.8	01/06/09	7440-02-0	Nickel	0.5	0.5	U
3050B	12/29/08	200.8	01/02/09	7782-49-2	Selenium	0.5	0.5	U
3050B	12/29/08	200.8	01/02/09	7440-22-4	Silver	0.2	0.2	U
3050B	12/29/08	200.8	01/02/09	7440-66-6	Zinc	4	4	U

U-Analyte undetected at given RL

RL-Reporting Limit

INORGANICS ANALYSIS DATA SHEET

TOTAL METALS

Sample ID: LAB CONTROL

Page 1 of 1

Lab Sample ID: OF06LCS

QC Report No: OF06-Newfields Northwest

LIMS ID: 08-34191

Project: Marina Park

Matrix: Sediment

Data Release Authorized: 

Date Sampled: NA

Reported: 01/08/09

Date Received: NA

BLANK SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Spike Found	Spike Added	% Recovery	Q
Arsenic	200.8	24.4	25.0	97.6%	
Cadmium	200.8	23.5	25.0	94.0%	
Chromium	200.8	24.8	25.0	99.2%	
Copper	200.8	23.1	25.0	92.4%	
Lead	200.8	26	25	104%	
Mercury	7471A	1.01	1.00	101%	
Nickel	200.8	26.8	25.0	107%	
Selenium	200.8	77.4	80.0	96.8%	
Silver	200.8	25.2	25.0	101%	
Zinc	200.8	78	80	97.5%	

Reported in mg/kg-dry

N-Control limit not met

NA-Not Applicable, Analyte Not Spiked

Control Limits: 80-120%



INORGANICS ANALYSIS DATA SHEET

TOTAL METALS

Page 1 of 1

Sample ID: MP10U COMP
SAMPLE

Lab Sample ID: OG68A

LIMS ID: 09-459

Matrix: Sediment

Data Release Authorized: *[Signature]*

Reported: 01/19/09

QC Report No: OG68-Newfields Northwest

Project: MARINA PARK

Date Sampled: 12/11/08

Date Received: 01/07/09

Percent Total Solids: 78.0%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry	Q
CLP	01/13/09	7471A	01/16/09	7439-97-6	Mercury	0.06	0.10	

U-Analyte undetected at given RL
RL-Reporting Limit

INORGANICS ANALYSIS DATA SHEET

TOTAL METALS

Page 1 of 1

Sample ID: MP10U COMP
DUPLICATE

Lab Sample ID: OG68A

LIMS ID: 09-459

Matrix: Sediment

Data Release Authorized: 

Reported: 01/19/09

QC Report No: OG68-Newfields Northwest

Project: MARINA PARK

Date Sampled: 12/11/08

Date Received: 01/07/09

MATRIX DUPLICATE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample	Duplicate	RPD	Control Limit	Q
Mercury	7471A	0.10	0.11	9.5%	+/- 0.06	L

Reported in mg/kg-dry

*-Control Limit Not Met

L-RPD Invalid, Limit = Detection Limit

INORGANICS ANALYSIS DATA SHEET

TOTAL METALS

Page 1 of 1

Sample ID: MP10U COMP
MATRIX SPIKE

Lab Sample ID: OG68A

LIMS ID: 09-459

Matrix: Sediment

Data Release Authorized 

Reported: 01/19/09

QC Report No: OG68-Newfields Northwest

Project: MARINA PARK

Date Sampled: 12/11/08

Date Received: 01/07/09

MATRIX SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample	Spike	Spike Added	% Recovery	Q
Mercury	7471A	0.10	0.55	0.570	78.9%	

Reported in mg/kg-dry

N-Control Limit Not Met

H-% Recovery Not Applicable, Sample Concentration Too High

NA-Not Applicable, Analyte Not Spiked

Percent Recovery Limits: 75-125%

INORGANICS ANALYSIS DATA SHEET

TOTAL METALS

Page 1 of 1

Sample ID: MP14U COMP
SAMPLE

Lab Sample ID: OG68B

LIMS ID: 09-460

Matrix: Sediment

Data Release Authorized: 

Reported: 01/19/09

QC Report No: OG68-Newfields Northwest

Project: MARINA PARK

Date Sampled: 12/11/08

Date Received: 01/07/09

Percent Total Solids: 78.3%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry	Q
CLP	01/13/09	7471A	01/16/09	7439-97-6	Mercury	0.06	0.85	

U-Analyte undetected at given RL

RL-Reporting Limit

INORGANICS ANALYSIS DATA SHEET

TOTAL METALS

Page 1 of 1

Sample ID: MP12U COMP
SAMPLE

Lab Sample ID: OG68C

LIMS ID: 09-461

Matrix: Sediment

Data Release Authorized: 

Reported: 01/19/09

QC Report No: OG68-Newfields Northwest

Project: MARINA PARK

Date Sampled: 12/11/08

Date Received: 01/07/09

Percent Total Solids: 80.2%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry	Q
CLP	01/13/09	7471A	01/16/09	7439-97-6	Mercury	0.05	0.31	

U-Analyte undetected at given RL

RL-Reporting Limit

INORGANICS ANALYSIS DATA SHEET

TOTAL METALS

Sample ID: METHOD BLANK

Page 1 of 1

Lab Sample ID: OG68MB

QC Report No: OG68-Newfields Northwest

LIMS ID: 09-460

Project: MARINA PARK

Matrix: Sediment

Data Release Authorized: 

Date Sampled: NA

Reported: 01/19/09

Date Received: NA

Percent Total Solids: NA

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry	Q
CLP	01/13/09	7471A	01/16/09	7439-97-6	Mercury	0.05	0.05	U

U-Analyte undetected at given RL

RL-Reporting Limit

INORGANICS ANALYSIS DATA SHEET

TOTAL METALS

Page 1 of 1

Sample ID: LAB CONTROL

Lab Sample ID: OG68LCS

LIMS ID: 09-460

Matrix: Sediment

Data Release Authorized: 

Reported: 01/19/09

QC Report No: OG68-Newfields Northwest

Project: MARINA PARK

Date Sampled: NA

Date Received: NA

BLANK SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Spike Found	Spike Added	% Recovery	Q
Mercury	7471A	1.04	1.00	104%	

Reported in mg/kg-dry

N-Control limit not met

NA-Not Applicable, Analyte Not Spiked

Control Limits: 80-120%

ORGANICS ANALYSIS DATA SHEET

Tributyl Tins by Krone 1988 SIM GC/MS
Page 1 of 1

Sample ID: COMP CU
SAMPLE

Lab Sample ID: OG93A

LIMS ID: 09-609

Matrix: Sediment

Data Release Authorized: 

Reported: 01/12/09

QC Report No: OG93-Newfields Northwest

Project: MARINA PARK

Event: NA

Date Sampled: 12/08/08

Date Received: 12/17/08

Date Extracted: 01/09/09

Date Analyzed: 01/12/09 14:30

Instrument/Analyst: NT2/YZ

Silica Gel Cleanup: No

Sample Amount: 5.43 g-dry-wt

Final Extract Volume: 0.50 mL

Dilution Factor: 1.00

Alumina Cleanup: Yes

Moisture: 23.5%

CAS Number	Analyte	RL	Result	Q
TBT_ION	Tributyltin Ion	3.6	< 3.6	U
DBT_ION	Dibutyltin Ion	5.3	< 5.3	U
BT_ION	Butyltin Ion	3.8	< 3.8	U

Reported in $\mu\text{g}/\text{kg}$ (ppb)

TBT Surrogate Recovery

Tripropyl Tin Chloride	67.7%
Triphenyl Tin Chloride	71.5%



ORGANICS ANALYSIS DATA SHEET
 Tributyl Tins by Krone 1988 SIM GC/MS
 Page 1 of 1

Sample ID: COMP CL
 SAMPLE

Lab Sample ID: OG93B
 LIMS ID: 09-610
 Matrix: Sediment
 Data Release Authorized: *AD*
 Reported: 01/12/09

QC Report No: OG93-Newfields Northwest
 Project: MARINA PARK
 Event: NA
 Date Sampled: 12/08/08
 Date Received: 12/17/08

Date Extracted: 01/09/09
 Date Analyzed: 01/12/09 15:28
 Instrument/Analyst: NT2/YZ
 Silica Gel Cleanup: No

Sample Amount: 5.16 g-dry-wt
 Final Extract Volume: 0.50 mL
 Dilution Factor: 1.00
 Alumina Cleanup: Yes
 Moisture: 16.8%

CAS Number	Analyte	RL	Result	Q
TBT_ION	Tributyltin Ion	3.7	< 3.7	U
DBT_ION	Dibutyltin Ion	5.6	< 5.6	U
BT_ION	Butyltin Ion	4.0	< 4.0	U

Reported in $\mu\text{g}/\text{kg}$ (ppb)

TBT Surrogate Recovery

Tripropyl Tin Chloride	83.7%
Tripentyl Tin Chloride	84.6%



ORGANICS ANALYSIS DATA SHEET
 Tributyl Tins by Krone 1988 SIM GC/MS
 Page 1 of 1

Sample ID: LA-3 REF.
 SAMPLE

Lab Sample ID: OG93C
 LIMS ID: 09-611
 Matrix: Sediment
 Data Release Authorized:
 Reported: 01/12/09

QC Report No: OG93-Newfields Northwest
 Project: MARINA PARK
 Event: NA
 Date Sampled: 12/08/08
 Date Received: 12/17/08

Date Extracted: 01/09/09
 Date Analyzed: 01/12/09 15:47
 Instrument/Analyst: NT2/YZ
 Silica Gel Cleanup: No

Sample Amount: 5.15 g-dry-wt
 Final Extract Volume: 0.50 mL
 Dilution Factor: 1.00
 Alumina Cleanup: Yes
 Moisture: 54.6%

CAS Number	Analyte	RL	Result	Q
TBT_ION	Tributyltin Ion	3.8	< 3.8	U
DBT_ION	Dibutyltin Ion	5.6	< 5.6	U
BT_ION	Butyltin Ion	4.0	< 4.0	U

Reported in $\mu\text{g}/\text{kg}$ (ppb)

TBT Surrogate Recovery

Tripropyl Tin Chloride	74.5%
Tripentyl Tin Chloride	81.0%

ORGANICS ANALYSIS DATA SHEET
Tributyl Tins by Krone 1988 SIM GC/MS
Page 1 of 1

Sample ID: COMP CU
MATRIX SPIKE

Lab Sample ID: OG93A
LIMS ID: 09-609
Matrix: Sediment
Data Release Authorized: *AS*
Reported: 01/12/09

QC Report No: OG93-Newfields Northwest
Project: MARINA PARK
Date Sampled: 12/08/08
Date Received: 12/17/08

Date Extracted MS: 01/09/09
Date Analyzed MS: 01/12/09 14:49
MSD: 01/12/09 15:09
Instrument/Analyst MS: NT2/YZ
MSD: NT2/YZ
Silica Gel Cleanup: No

Sample Amount MS: 5.52 g-dry-wt
MSD: 5.55 g-dry-wt
Final Extract Volume MS: 0.5 mL
MSD: 0.5 mL
Dilution Factor MS: 1.00
MSD: 1.00
Alumina Cleanup: Yes
Moisture: 23.5%

Analyte	Sample	MS	Spike Added-MS	MS Recovery	MSD	Spike Added-MSD	MSD Recovery	RPD
Tributyltin Ion	< 3.6 U	33.9	40.4	83.9%	41.8	40.2	104%	20.9%
Dibutyltin Ion	< 5.3 U	42.0	34.8	121%	34.8	34.6	101%	18.8%
Butyltin Ion	< 3.8 U	22.3	28.3	78.8%	18.9	28.1	67.3%	16.5%

Results reported in $\mu\text{g}/\text{kg}$
RPD calculated using sample concentrations per SW846.



ORGANICS ANALYSIS DATA SHEET
 Tributyl Tins by Krone 1988 SIM GC/MS
 Page 1 of 1

Sample ID: COMP CU
 MATRIX SPIKE

Lab Sample ID: OG93A
 LIMS ID: 09-609
 Matrix: Sediment
 Data Release Authorized:
 Reported: 01/12/09

QC Report No: OG93-Newfields Northwest
 Project: MARINA PARK
 Event: NA
 Date Sampled: 12/08/08
 Date Received: 12/17/08

Date Extracted: 01/09/09
 Date Analyzed: 01/12/09 14:49
 Instrument/Analyst: NT2/YZ
 Silica Gel Cleanup: No

Sample Amount: 5.52 g-dry-wt
 Final Extract Volume: 0.50 mL
 Dilution Factor: 1.00
 Alumina Cleanup: Yes
 Moisture: 23.5%

CAS Number	Analyte	RL	Result	Q
TBT_ION	Tributyltin Ion	3.5	---	
DBT_ION	Dibutyltin Ion	5.2	---	
BT_ION	Butyltin Ion	3.7	---	

Reported in $\mu\text{g}/\text{kg}$ (ppb)

TBT Surrogate Recovery

Tripropyl Tin Chloride	71.8%
Tripentyl Tin Chloride	74.2%



ORGANICS ANALYSIS DATA SHEET
 Tributyl Tins by Krone 1988 SIM GC/MS
 Page 1 of 1

Sample ID: COMP CU
 MATRIX SPIKE DUP

Lab Sample ID: OG93A
 LIMS ID: 09-609
 Matrix: Sediment
 Data Release Authorized: *[Signature]*
 Reported: 01/12/09

QC Report No: OG93-Newfields Northwest
 Project: MARINA PARK
 Event: NA
 Date Sampled: 12/08/08
 Date Received: 12/17/08

Date Extracted: 01/09/09
 Date Analyzed: 01/12/09 15:09
 Instrument/Analyst: NT2/YZ
 Silica Gel Cleanup: No

Sample Amount: 5.55 g-dry-wt
 Final Extract Volume: 0.50 mL
 Dilution Factor: 1.00
 Alumina Cleanup: Yes
 Moisture: 23.5%

CAS Number	Analyte	RL	Result	Q
TBT_ION	Tributyltin Ion	3.5	---	
DBT_ION	Dibutyltin Ion	5.2	---	
BT_ION	Butyltin Ion	3.7	---	

Reported in $\mu\text{g}/\text{kg}$ (ppb)

TBT Surrogate Recovery

Tripropyl Tin Chloride	74.2%
Tripentyl Tin Chloride	75.4%



ORGANICS ANALYSIS DATA SHEET
 Tributyl Tins by Krone 1988 SIM GC/MS
 Page 1 of 1

Sample ID: MB-010909
 METHOD BLANK

Lab Sample ID: MB-010909
 LIMS ID: 09-609
 Matrix: Sediment
 Data Release Authorized:
 Reported: 01/12/09

QC Report No: OG93-Newfields Northwest
 Project: MARINA PARK
 Event: NA
 Date Sampled: NA
 Date Received: NA

Date Extracted: 01/09/09
 Date Analyzed: 01/12/09 13:51
 Instrument/Analyst: NT2/YZ
 Silica Gel Cleanup: No

Sample Amount: 5.00 g-dry-wt
 Final Extract Volume: 0.50 mL
 Dilution Factor: 1.00
 Alumina Cleanup: Yes

CAS Number	Analyte	RL	Result	Q
TBT_ION	Tributyltin Ion	3.9	< 3.9	U
DBT_ION	Dibutyltin Ion	5.8	< 5.8	U
BT_ION	Butyltin Ion	4.1	< 4.1	U

Reported in $\mu\text{g}/\text{kg}$ (ppb)

TBT Surrogate Recovery

Tripropyl Tin Chloride	76.2%
Triphenyl Tin Chloride	81.7%

ORGANICS ANALYSIS DATA SHEET

Tributyl Tins by Krone 1988 SIM GC/MS
Page 1 of 1

Sample ID: LCS-010909
LAB CONTROL SAMPLE

Lab Sample ID: LCS-010909
LIMS ID: 09-609
Matrix: Sediment
Data Release Authorized: 
Reported: 01/12/09

QC Report No: OG93-Newfields Northwest
Project: MARINA PARK
Date Sampled: NA
Date Received: NA

Date Extracted LCS: 01/09/09
Date Analyzed LCS: 01/12/09 14:11
Instrument/Analyst LCS: NT2/YZ
Silica Gel Cleanup: No

Sample Amount LCS: 5.00 g-dry-wt
Final Extract Volume LCS: 0.50 mL
Dilution Factor LCS: 1.00
Alumina Cleanup: Yes

Analyte	LCS	Spike Added	Recovery
Tributyltin Ion	41.5	44.6	93.0%
Dibutyltin Ion	33.5	38.4	87.2%
Butyltin Ion	23.8	31.2	76.3%

Reported in $\mu\text{g}/\text{kg}$ (ppb)

TBT Surrogate Recovery

Tripropyl Tin Chloride	82.7%
Triphenyl Tin Chloride	96.4%

TBT SURROGATE RECOVERY SUMMARY

Matrix: Sediment

QC Report No: OG93-Newfields Northwest

Project: MARINA PARK

Event: NA

Client ID	TPRT	TPNT	TOT OUT
MB-010909	76.2%	81.7%	0
LCS-010909	82.7%	96.4%	0
COMP CU	67.7%	71.5%	0
COMP CU MS	71.8%	74.2%	0
COMP CU MSD	74.2%	75.4%	0
COMP CL	83.7%	84.6%	0
LA-3 REF.	74.5%	81.0%	0

	LCS/MB LIMITS	QC LIMITS
(TPRT) = Tripropyl Tin Chloride	(30-160)	(30-160)
(TPNT) = Tripentyl Tin Chloride	(30-160)	(30-160)

Prep Method: SW3546
Analytical Method: TBT (Hexyl) Krone 1988
Log Number Range: 09-609 to 09-611

ORGANICS ANALYSIS DATA SHEET

PSDDA PCB by GC/ECD

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Sample ID: MB-123008

METHOD BLANK

Lab Sample ID: MB-123008

LIMS ID: 08-34190

Matrix: Sediment

Data Release Authorized: *MW*

Reported: 01/05/09

QC Report No: OF06-Newfields Northwest

Project: Marina Park

Date Sampled: NA

Date Received: NA

Date Extracted: 12/30/08

Date Analyzed: 01/02/09 12:51

Instrument/Analyst: ECD5/JGR

GPC Cleanup: No

Sulfur Cleanup: Yes

Acid Cleanup: Yes

Florisil Cleanup: No

Sample Amount: 25.0 g

Final Extract Volume: 5.0 mL

Dilution Factor: 1.00

Silica Gel: No

Percent Moisture: NA

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	20	< 20 U
53469-21-9	Aroclor 1242	20	< 20 U
12672-29-6	Aroclor 1248	20	< 20 U
11097-69-1	Aroclor 1254	20	< 20 U
11096-82-5	Aroclor 1260	20	< 20 U
11104-28-2	Aroclor 1221	20	< 20 U
11141-16-5	Aroclor 1232	20	< 20 U

Reported in $\mu\text{g}/\text{kg}$ (ppb)

PCB Surrogate Recovery

Decachlorobiphenyl	84.2%
Tetrachlorometaxylene	87.2%

ORGANICS ANALYSIS DATA SHEET

PSDDA PCB by GC/ECD

Page 1 of 1

Sample ID: Comp CU

SAMPLE

Lab Sample ID: OF06A

LIMS ID: 08-34190

Matrix: Sediment

Data Release Authorized: *MW*

Reported: 01/05/09

QC Report No: OF06-Newfields Northwest

Project: Marina Park

Date Sampled: 12/08/08

Date Received: 12/17/08

Date Extracted: 12/30/08

Date Analyzed: 01/02/09 13:26

Instrument/Analyst: ECD5/JGR

GPC Cleanup: No

Sulfur Cleanup: Yes

Acid Cleanup: Yes

Florisil Cleanup: No

Sample Amount: 25.7 g-dry-wt

Final Extract Volume: 5.0 mL

Dilution Factor: 1.00

Silica Gel: No

Percent Moisture: 22.6%

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	20	< 20 U
53469-21-9	Aroclor 1242	20	< 20 U
12672-29-6	Aroclor 1248	20	< 20 U
11097-69-1	Aroclor 1254	20	< 20 U
11096-82-5	Aroclor 1260	20	< 20 U
11104-28-2	Aroclor 1221	20	< 20 U
11141-16-5	Aroclor 1232	20	< 20 U

Reported in $\mu\text{g}/\text{kg}$ (ppb)

PCB Surrogate Recovery

Decachlorobiphenyl	76.5%
Tetrachlorometaxylene	86.8%

ORGANICS ANALYSIS DATA SHEET

PSDDA PCB by GC/ECD

Page 1 of 1

Sample ID: Comp CL
SAMPLE

Lab Sample ID: OF06B

LIMS ID: 08-34191

Matrix: Sediment

Data Release Authorized: *MW*

Reported: 01/05/09

QC Report No: OF06-Newfields Northwest

Project: Marina Park

Date Sampled: 12/08/08

Date Received: 12/17/08

Date Extracted: 12/30/08

Date Analyzed: 01/02/09 13:43

Instrument/Analyst: ECD5/JGR

GPC Cleanup: No

Sulfur Cleanup: Yes

Acid Cleanup: Yes

Florisil Cleanup: No

Sample Amount: 25.9 g-dry-wt

Final Extract Volume: 5.0 mL

Dilution Factor: 1.00

Silica Gel: No

Percent Moisture: 11.0%

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	19	< 19 U
53469-21-9	Aroclor 1242	19	< 19 U
12672-29-6	Aroclor 1248	19	< 19 U
11097-69-1	Aroclor 1254	19	< 19 U
11096-82-5	Aroclor 1260	19	< 19 U
11104-28-2	Aroclor 1221	19	< 19 U
11141-16-5	Aroclor 1232	19	< 19 U

Reported in $\mu\text{g}/\text{kg}$ (ppb)

PCB Surrogate Recovery

Decachlorobiphenyl	86.5%
Tetrachlorometaxylene	87.8%



ORGANICS ANALYSIS DATA SHEET

PSDDA PCB by GC/ECD

Page 1 of 1

Sample ID: LA-3 Ref

SAMPLE

Lab Sample ID: OF06C

LIMS ID: 08-34192

Matrix: Sediment

Data Release Authorized: *MW*

Reported: 01/05/09

QC Report No: OF06-Newfields Northwest

Project: Marina Park

Date Sampled: 12/08/08

Date Received: 12/17/08

Date Extracted: 12/30/08

Date Analyzed: 01/02/09 14:00

Instrument/Analyst: ECD5/JGR

GPC Cleanup: No

Sulfur Cleanup: Yes

Acid Cleanup: Yes

Florisil Cleanup: No

Sample Amount: 25.6 g-dry-wt

Final Extract Volume: 5.0 mL

Dilution Factor: 1.00

Silica Gel: No

Percent Moisture: 52.5%

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	20	< 20 U
53469-21-9	Aroclor 1242	20	< 20 U
12672-29-6	Aroclor 1248	20	< 20 U
11097-69-1	Aroclor 1254	20	< 20 U
11096-82-5	Aroclor 1260	20	< 20 U
11104-28-2	Aroclor 1221	20	< 20 U
11141-16-5	Aroclor 1232	20	< 20 U

Reported in µg/kg (ppb)

PCB Surrogate Recovery

Decachlorobiphenyl	77.8%
Tetrachlorometaxylene	85.0%

SW8082/PCB SOIL/SEDIMENT SURROGATE RECOVERY SUMMARY

Matrix: Sediment

QC Report No: OF06-Newfields Northwest
Project: Marina Park

Client ID	DCBP % REC	DCBP LCL-UCL	TCMX % REC	TCMX LCL-UCL	TOT OUT
MB-123008	84.2%	65-117	87.2%	63-119	0
LCS-123008	86.5%	65-117	95.0%	63-119	0
Comp CU	76.5%	43-148	86.8%	48-123	0
Comp CL	86.5%	43-148	87.8%	48-123	0
LA-3 Ref	77.8%	43-148	85.0%	48-123	0

PSDDA Control Limits
Prep Method: SW3550B
Log Number Range: 08-34190 to 08-34192

ORGANICS ANALYSIS DATA SHEET
PSDDA PCB by GC/ECD
Page 1 of 1

Sample ID: LCS-123008
LAB CONTROL

Lab Sample ID: LCS-123008
LIMS ID: 08-34190
Matrix: Sediment
Data Release Authorized: *MW*
Reported: 01/05/09

QC Report No: OF06-Newfields Northwest
Project: Marina Park
Date Sampled: NA
Date Received: NA

Date Extracted: 12/30/08
Date Analyzed: 01/02/09 13:09
Instrument/Analyst: ECD5/JGR
GPC Cleanup: No
Sulfur Cleanup: Yes
Acid Cleanup: Yes
Florisil Cleanup: No

Sample Amount: 25.0 g-dry-wt
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: No
Percent Moisture: NA

Analyte	Lab Control	Spike Added	Recovery
Aroclor 1016	93.1	100	93.1%
Aroclor 1260	88.4	100	88.4%

PCB Surrogate Recovery

Decachlorobiphenyl	86.5%
Tetrachlorometaxylene	95.0%

Results reported in $\mu\text{g}/\text{kg}$ (ppb)

ORGANICS ANALYSIS DATA SHEET
PSDDA Pesticides/PCB by GC/ECD
 Page 1 of 1

Sample ID: Comp CU
 SAMPLE

Lab Sample ID: OF06A
 LIMS ID: 08-34190
 Matrix: Sediment
 Data Release Authorized: VTS
 Reported: 01/08/09

QC Report No: OF06-Newfields Northwest
 Project: Marina Park

Date Sampled: 12/08/08
 Date Received: 12/17/08

Date Extracted: 12/30/08
 Date Analyzed: 01/07/09 12:35
 Instrument/Analyst: ECD4/AAR
 GPC Cleanup: No
 Sulfur Cleanup: Yes
 Florisil Cleanup: No
 Acid Cleanup: No

Sample Amount: 25.6 g-dry-wt
 Final Extract Volume: 5.0 mL
 Dilution Factor: 1.00
 Silica Gel: Yes
 Percent Moisture: 22.6%

CAS Number	Analyte	RL	Result
319-84-6	alpha-BHC	0.98	< 0.98 U
319-85-7	beta-BHC	0.98	< 0.98 U
319-86-8	delta-BHC	0.98	< 0.98 U
58-89-9	gamma-BHC (Lindane)	0.98	< 0.98 U
76-44-8	Heptachlor	0.98	< 0.98 U
309-00-2	Aldrin	0.98	< 0.98 U
1024-57-3	Heptachlor Epoxide	0.98	< 0.98 U
959-98-8	Endosulfan I	0.98	< 0.98 U
60-57-1	Dieldrin	2.0	< 2.0 U
72-55-9	4,4'-DDE	2.0	< 2.0 U
72-20-8	Endrin	2.0	< 2.0 U
33213-65-9	Endosulfan II	2.0	< 2.0 U
72-54-8	4,4'-DDD	2.0	< 2.0 U
1031-07-8	Endosulfan Sulfate	2.0	< 2.0 U
50-29-3	4,4'-DDT	2.0	< 2.0 U
72-43-5	Methoxychlor	9.8	< 9.8 U
7421-93-4	Endrin Aldehyde	2.0	< 2.0 U
5103-74-2	gamma Chlordane	0.98	< 0.98 U
5103-71-9	alpha Chlordane	0.98	< 0.98 U
8001-35-2	Toxaphene	98	< 98 U
789-02-6	2,4'-DDT	2.0	< 2.0 U
3424-82-6	2,4'-DDE	2.0	< 2.0 U
53-19-0	2,4'-DDD	2.0	< 2.0 U

Reported in µg/kg (ppb)

Pest/PCB Surrogate Recovery

Decachlorobiphenyl	80.5%
Tetrachlorometaxylene	68.2%

ORGANICS ANALYSIS DATA SHEET
PSDDA Pesticides/PCB by GC/ECD
 Page 1 of 1

Sample ID: Comp CL
SAMPLE

Lab Sample ID: OF06B
 LIMS ID: 08-34191
 Matrix: Sediment
 Data Release Authorized: **VTS**
 Reported: 01/08/09

QC Report No: OF06-Newfields Northwest
 Project: Marina Park
 Date Sampled: 12/08/08
 Date Received: 12/17/08

Date Extracted: 12/30/08
 Date Analyzed: 01/07/09 12:55
 Instrument/Analyst: ECD4/AAR
 GPC Cleanup: No
 Sulfur Cleanup: Yes
 Florisil Cleanup: No
 Acid Cleanup: No

Sample Amount: 26.6 g-dry-wt
 Final Extract Volume: 5.0 mL
 Dilution Factor: 1.00
 Silica Gel: Yes
 Percent Moisture: 11.0%

CAS Number	Analyte	RL	Result
319-84-6	alpha-BHC	0.94	< 0.94 U
319-85-7	beta-BHC	0.94	< 0.94 U
319-86-8	delta-BHC	0.94	< 0.94 U
58-89-9	gamma-BHC (Lindane)	0.94	< 0.94 U
76-44-8	Heptachlor	0.94	< 0.94 U
309-00-2	Aldrin	0.94	< 0.94 U
1024-57-3	Heptachlor Epoxide	0.94	< 0.94 U
959-98-8	Endosulfan I	0.94	< 0.94 U
60-57-1	Dieldrin	1.9	< 1.9 U
72-55-9	4,4'-DDE	1.9	< 1.9 U
72-20-8	Endrin	1.9	< 1.9 U
33213-65-9	Endosulfan II	1.9	< 1.9 U
72-54-8	4,4'-DDD	1.9	< 1.9 U
1031-07-8	Endosulfan Sulfate	1.9	< 1.9 U
50-29-3	4,4'-DDT	1.9	< 1.9 U
72-43-5	Methoxychlor	9.4	< 9.4 U
7421-93-4	Endrin Aldehyde	1.9	< 1.9 U
5103-74-2	gamma Chlordane	0.94	< 0.94 U
5103-71-9	alpha Chlordane	0.94	< 0.94 U
8001-35-2	Toxaphene	94	< 94 U
789-02-6	2,4'-DDT	1.9	< 1.9 U
3424-82-6	2,4'-DDE	1.9	< 1.9 U
53-19-0	2,4'-DDD	1.9	< 1.9 U

Reported in µg/kg (ppb)

Pest/PCB Surrogate Recovery

Decachlorobiphenyl	78.5%
Tetrachlorometaxylene	63.5%

ORGANICS ANALYSIS DATA SHEET
PSDDA Pesticides/PCB by GC/ECD
 Page 1 of 1

Sample ID: LA-3 Ref
SAMPLE

Lab Sample ID: OF06C
 LIMS ID: 08-34192
 Matrix: Sediment
 Data Release Authorized: **VTS**
 Reported: 01/08/09

QC Report No: OF06-Newfields Northwest
 Project: Marina Park

Date Sampled: 12/08/08
 Date Received: 12/17/08

Date Extracted: 12/30/08
 Date Analyzed: 01/07/09 13:15
 Instrument/Analyst: ECD4/AAR
 GPC Cleanup: No
 Sulfur Cleanup: Yes
 Florisil Cleanup: No
 Acid Cleanup: No

Sample Amount: 25.6 g-dry-wt
 Final Extract Volume: 5.0 mL
 Dilution Factor: 1.00
 Silica Gel: Yes

Percent Moisture: 52.5%

CAS Number	Analyte	RL	Result
319-84-6	alpha-BHC	0.98	< 0.98 U
319-85-7	beta-BHC	0.98	< 0.98 U
319-86-8	delta-BHC	0.98	< 0.98 U
58-89-9	gamma-BHC (Lindane)	0.98	< 0.98 U
76-44-8	Heptachlor	0.98	< 0.98 U
309-00-2	Aldrin	0.98	< 0.98 U
1024-57-3	Heptachlor Epoxide	0.98	< 0.98 U
959-98-8	Endosulfan I	0.98	< 0.98 U
60-57-1	Dieldrin	2.0	< 2.0 U
72-55-9	4,4'-DDE	2.0	< 2.0 U
72-20-8	Endrin	2.0	< 2.0 U
33213-65-9	Endosulfan II	2.0	< 2.0 U
72-54-8	4,4'-DDD	2.0	< 2.0 U
1031-07-8	Endosulfan Sulfate	2.0	< 2.0 U
50-29-3	4,4'-DDT	2.0	< 2.0 U
72-43-5	Methoxychlor	9.8	< 9.8 U
7421-93-4	Endrin Aldehyde	2.0	< 2.0 U
5103-74-2	gamma Chlordane	0.98	< 0.98 U
5103-71-9	alpha Chlordane	0.98	< 0.98 U
8001-35-2	Toxaphene	98	< 98 U
789-02-6	2,4'-DDT	2.0	< 2.0 U
3424-82-6	2,4'-DDE	2.0	< 2.0 U
53-19-0	2,4'-DDD	2.0	< 2.0 U

Reported in $\mu\text{g}/\text{kg}$ (ppb)

Pest/PCB Surrogate Recovery

Decachlorobiphenyl	80.0%
Tetrachlorometaxylene	70.0%

SW8081 PESTICIDE SOIL/SEDIMENT SURROGATE RECOVERY SUMMARY

Matrix: Sediment

QC Report No: OF06-Newfields Northwest
Project: Marina Park

<u>Client ID</u>	<u>DCBP</u>	<u>TCMX</u>	<u>TOT OUT</u>
MB-123008	82.2%	73.5%	0
LCS-123008	83.8%	70.5%	0
Comp CU	80.5%	68.2%	0
Comp CL	78.5%	63.5%	0
LA-3 Ref	80.0%	70.0%	0

LCS/MB LIMITS QC LIMITS

(DCBP) = Decachlorobiphenyl (65-125) (52-143)
(TCMX) = Tetrachlorometaxylene (53-112) (43-128)

Prep Method: SW3550B
Log Number Range: 08-34190 to 08-34192

ORGANICS ANALYSIS DATA SHEET
PSDDA Pesticides/PCB by GC/ECD
Page 1 of 1



Sample ID: LCS-123008
LAB CONTROL

Lab Sample ID: LCS-123008
LIMS ID: 08-34190
Matrix: Sediment
Data Release Authorized: VTS
Reported: 01/08/09

QC Report No: OF06-Newfields Northwest
Project: Marina Park
Date Sampled: 12/08/08
Date Received: 12/17/08

Date Extracted: 12/30/08
Date Analyzed: 01/07/09 12:14
Instrument/Analyst: ECD4/AAR
GPC Cleanup: No
Sulfur Cleanup: Yes
Florisil Cleanup: No

Sample Amount: 25.0 g-dry-wt
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: Yes
Percent Moisture: NA

Analyte	Lab Control	Spike Added	Recovery
alpha-BHC	3.12	4.00	78.0%
beta-BHC	3.30	4.00	82.5%
delta-BHC	3.52	4.00	88.0%
gamma-BHC (Lindane)	3.40	4.00	85.0%
Heptachlor	3.24	4.00	81.0%
Aldrin	3.46	4.00	86.5%
Heptachlor Epoxide	4.16	4.00	104%
Endosulfan I	3.74	4.00	93.5%
Dieldrin	7.62	8.00	95.2%
4,4'-DDE	8.82	8.00	110%
Endrin	7.34	8.00	91.8%
Endosulfan II	7.94	8.00	99.2%
4,4'-DDD	7.64	8.00	95.5%
Endosulfan Sulfate	7.86	8.00	98.2%
4,4'-DDT	8.24	8.00	103%
Methoxychlor	39.6	40.0	99.0%
Endrin Aldehyde	5.08	8.00	63.5%
gamma Chlordane	4.02	4.00	100%
alpha Chlordane	4.08	4.00	102%

Pest/PCB Surrogate Recovery

Decachlorobiphenyl	83.8%
Tetrachlorometaxylene	70.5%

Reported in $\mu\text{g}/\text{kg}$ (ppb)

ORGANICS ANALYSIS DATA SHEET
PSDDA Pesticides/PCB by GC/ECD
 Page 1 of 1

Sample ID: MB-123008
 METHOD BLANK

Lab Sample ID: MB-123008
 LIMS ID: 08-34190
 Matrix: Sediment
 Data Release Authorized: **VTS**
 Reported: 01/08/09

QC Report No: OF06-Newfields Northwest
 Project: Marina Park

Date Sampled: NA
 Date Received: NA

Date Extracted: 12/30/08
 Date Analyzed: 01/07/09 11:54
 Instrument/Analyst: ECD4/AAR
 GPC Cleanup: No
 Sulfur Cleanup: Yes
 Florisil Cleanup: No
 Acid Cleanup: No

Sample Amount: 25.0 g-dry-wt
 Final Extract Volume: 5.0 mL
 Dilution Factor: 1.00
 Silica Gel: Yes

Percent Moisture: NA

CAS Number	Analyte	RL	Result
319-84-6	alpha-BHC	1.0	< 1.0 U
319-85-7	beta-BHC	1.0	< 1.0 U
319-86-8	delta-BHC	1.0	< 1.0 U
58-89-9	gamma-BHC (Lindane)	1.0	< 1.0 U
76-44-8	Heptachlor	1.0	< 1.0 U
309-00-2	Aldrin	1.0	< 1.0 U
1024-57-3	Heptachlor Epoxide	1.0	< 1.0 U
959-98-8	Endosulfan I	1.0	< 1.0 U
60-57-1	Dieldrin	2.0	< 2.0 U
72-55-9	4,4'-DDE	2.0	< 2.0 U
72-20-8	Endrin	2.0	< 2.0 U
33213-65-9	Endosulfan II	2.0	< 2.0 U
72-54-8	4,4'-DDD	2.0	< 2.0 U
1031-07-8	Endosulfan Sulfate	2.0	< 2.0 U
50-29-3	4,4'-DDT	2.0	< 2.0 U
72-43-5	Methoxychlor	10	< 10 U
7421-93-4	Endrin Aldehyde	2.0	< 2.0 U
5103-74-2	gamma Chlordane	1.0	< 1.0 U
5103-71-9	alpha Chlordane	1.0	< 1.0 U
8001-35-2	Toxaphene	100	< 100 U
789-02-6	2,4'-DDT	2.0	< 2.0 U
3424-82-6	2,4'-DDE	2.0	< 2.0 U
53-19-0	2,4'-DDD	2.0	< 2.0 U

Reported in µg/kg (ppb)

Pest/PCB Surrogate Recovery

Decachlorobiphenyl	82.2%
Tetrachlorometaxylene	73.5%

SIM SW8270 SURROGATE RECOVERY SUMMARY

Matrix: Sediment

QC Report No: OF06-Newfields Northwest
Project: Marina Park

Client ID	MNP	DBA	TOT OUT
MB-123008	67.7%	80.3%	0
LCS-123008	67.3%	82.7%	0
Comp CU	69.0%	79.7%	0
Comp CL	64.7%	81.3%	0
LA-3 Ref	71.7%	87.3%	0

	LCS/MB LIMITS	QC LIMITS
(MNP) = d10-2-Methylnaphthalene	(44-100)	(37-106)
(DBA) = d14-Dibenzo(a,h)anthracene	(46-121)	(16-118)

Prep Method: SW3550B
Log Number Range: 08-34190 to 08-34192



ORGANICS ANALYSIS DATA SHEET
 PNAs by SW8270D-SIM GC/MS
 Page 1 of 1

Sample ID: Comp CU
 SAMPLE

Lab Sample ID: OF06A
 LIMS ID: 08-34190
 Matrix: Sediment
 Data Release Authorized: *[Signature]*
 Reported: 01/06/09

QC Report No: OF06-Newfields Northwest
 Project: Marina Park
 Event: NA
 Date Sampled: 12/08/08
 Date Received: 12/17/08

Date Extracted: 12/30/08
 Date Analyzed: 01/03/09 18:23
 Instrument/Analyst: NT1/YZ
 GPC Cleanup: No
 Silica Gel Cleanup: Yes
 Alumina Cleanup: No

Sample Amount: 10.3 g-dry-wt
 Final Extract Volume: 0.5 mL
 Dilution Factor: 1.00
 Percent Moisture: 22.6%

CAS Number	Analyte	RL	Result
83-32-9	Acenaphthene	4.8	< 4.8 U
86-73-7	Fluorene	4.8	< 4.8 U
85-01-8	Phenanthrene	4.8	< 4.8 U
120-12-7	Anthracene	4.8	< 4.8 U
206-44-0	Fluoranthene	4.8	15
129-00-0	Pyrene	4.8	19
56-55-3	Benzo (a) anthracene	4.8	6.3
218-01-9	Chrysene	4.8	7.8
205-99-2	Benzo (b) fluoranthene	4.8	12
50-32-8	Benzo (a) pyrene	4.8	16
193-39-5	Indeno (1,2,3-cd) pyrene	4.8	12
53-70-3	Dibenz (a,h) anthracene	4.8	< 4.8 U
191-24-2	Benzo (g,h,i) perylene	4.8	20

Reported in $\mu\text{g}/\text{kg}$ (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene 69.0%
 d14-Dibenzo(a,h)anthracen 79.7%



ORGANICS ANALYSIS DATA SHEET
 PNAs by SW8270D-SIM GC/MS
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Sample ID: Comp CL
 SAMPLE

Lab Sample ID: OF06B
 LIMS ID: 08-34191
 Matrix: Sediment
 Data Release Authorized: 
 Reported: 01/06/09

QC Report No: OF06-Newfields Northwest
 Project: Marina Park
 Event: NA
 Date Sampled: 12/08/08
 Date Received: 12/17/08

Date Extracted: 12/30/08
 Date Analyzed: 01/03/09 18:48
 Instrument/Analyst: NT1/YZ
 GPC Cleanup: No
 Silica Gel Cleanup: Yes
 Alumina Cleanup: No

Sample Amount: 11.2 g-dry-wt
 Final Extract Volume: 0.5 mL
 Dilution Factor: 1.00
 Percent Moisture: 11.0%

CAS Number	Analyte	RL	Result
83-32-9	Acenaphthene	4.5	< 4.5 U
86-73-7	Fluorene	4.5	< 4.5 U
85-01-8	Phenanthrene	4.5	< 4.5 U
120-12-7	Anthracene	4.5	< 4.5 U
206-44-0	Fluoranthene	4.5	< 4.5 U
129-00-0	Pyrene	4.5	< 4.5 U
56-55-3	Benzo(a)anthracene	4.5	< 4.5 U
218-01-9	Chrysene	4.5	< 4.5 U
205-99-2	Benzo(b)fluoranthene	4.5	< 4.5 U
50-32-8	Benzo(a)pyrene	4.5	< 4.5 U
193-39-5	Indeno(1,2,3-cd)pyrene	4.5	< 4.5 U
53-70-3	Dibenz(a,h)anthracene	4.5	< 4.5 U
191-24-2	Benzo(g,h,i)perylene	4.5	< 4.5 U

Reported in $\mu\text{g}/\text{kg}$ (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene 64.7%
 d14-Dibenzo(a,h)anthracen 81.3%

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Page 1 of 1

Sample ID: LA-3 Ref
SAMPLE

Lab Sample ID: OF06C
LIMS ID: 08-34192
Matrix: Sediment
Data Release Authorized: *[Signature]*
Reported: 01/06/09

QC Report No: OF06-Newfields Northwest
Project: Marina Park
Event: NA
Date Sampled: 12/08/08
Date Received: 12/17/08

Date Extracted: 12/30/08
Date Analyzed: 01/03/09 19:13
Instrument/Analyst: NT1/YZ
GPC Cleanup: No
Silica Gel Cleanup: Yes
Alumina Cleanup: No

Sample Amount: 10.3 g-dry-wt
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: 52.5%

CAS Number	Analyte	RL	Result
83-32-9	Acenaphthene	4.8	< 4.8 U
86-73-7	Fluorene	4.8	< 4.8 U
85-01-8	Phenanthrene	4.8	< 4.8 U
120-12-7	Anthracene	4.8	< 4.8 U
206-44-0	Fluoranthene	4.8	8.7
129-00-0	Pyrene	4.8	11
56-55-3	Benzo(a)anthracene	4.8	< 4.8 U
218-01-9	Chrysene	4.8	5.8
205-99-2	Benzo(b)fluoranthene	4.8	5.3
50-32-8	Benzo(a)pyrene	4.8	5.3
193-39-5	Indeno(1,2,3-cd)pyrene	4.8	< 4.8 U
53-70-3	Dibenz(a,h)anthracene	4.8	< 4.8 U
191-24-2	Benzo(g,h,i)perylene	4.8	4.8

Reported in $\mu\text{g}/\text{kg}$ (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene 71.7%
d14-Dibenzo(a,h)anthracen 87.3%



ORGANICS ANALYSIS DATA SHEET
 PNAs by SW8270D-SIM GC/MS
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Sample ID: MB-123008
 METHOD BLANK

Lab Sample ID: MB-123008
 LIMS ID: 08-34190
 Matrix: Sediment
 Data Release Authorized: *[Signature]*
 Reported: 01/06/09

QC Report No: OF06-Newfields Northwest
 Project: Marina Park
 Event: NA
 Date Sampled: NA
 Date Received: NA

Date Extracted: 12/30/08
 Date Analyzed: 01/03/09 17:34
 Instrument/Analyst: NTL/YZ
 GPC Cleanup: No
 Silica Gel Cleanup: Yes
 Alumina Cleanup: No

Sample Amount: 10.0 g-dry-wt
 Final Extract Volume: 0.5 mL
 Dilution Factor: 1.00
 Percent Moisture: NA

CAS Number	Analyte	RL	Result
83-32-9	Acenaphthene	5.0	< 5.0 U
86-73-7	Fluorene	5.0	< 5.0 U
85-01-8	Phenanthrene	5.0	< 5.0 U
120-12-7	Anthracene	5.0	< 5.0 U
206-44-0	Fluoranthene	5.0	< 5.0 U
129-00-0	Pyrene	5.0	< 5.0 U
56-55-3	Benzo(a)anthracene	5.0	< 5.0 U
218-01-9	Chrysene	5.0	< 5.0 U
205-99-2	Benzo(b)fluoranthene	5.0	< 5.0 U
50-32-8	Benzo(a)pyrene	5.0	< 5.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	5.0	< 5.0 U
53-70-3	Dibenz(a,h)anthracene	5.0	< 5.0 U
191-24-2	Benzo(g,h,i)perylene	5.0	< 5.0 U

Reported in $\mu\text{g}/\text{kg}$ (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene 67.7%
 d14-Dibenzo(a,h)anthracen 80.3%



ORGANICS ANALYSIS DATA SHEET
 PNAs by SW8270D-SIM GC/MS
 Page 1 of 1

Sample ID: LCS-123008
 LAB CONTROL SAMPLE

Lab Sample ID: LCS-123008
 LIMS ID: 08-34190
 Matrix: Sediment
 Data Release Authorized: *AB*
 Reported: 01/06/09

QC Report No: OF06-Newfields Northwest
 Project: Marina Park
 Event: NA
 Date Sampled: NA
 Date Received: NA

Date Extracted: 12/30/08
 Date Analyzed LCS: 01/03/09 17:58
 Instrument/Analyst LCS: NT1/YZ

Sample Amount LCS: 10.0 g-dry-wt
 Final Extract Volume LCS: 0.50 mL
 Dilution Factor LCS: 1.00

Analyte	LCS	Spike Added	Recovery
Acenaphthene	108	150	72.0%
Fluorene	108	150	72.0%
Phenanthrene	114	150	76.0%
Anthracene	115	150	76.7%
Fluoranthene	134	150	89.3%
Pyrene	134	150	89.3%
Benzo (a) anthracene	132	150	88.0%
Chrysene	132	150	88.0%
Benzo (b) fluoranthene	128	150	85.3%
Benzo (a) pyrene	140	150	93.3%
Indeno (1,2,3-cd) pyrene	124	150	82.7%
Dibenz (a,h) anthracene	124	150	82.7%
Benzo (g,h,i) perylene	118	150	78.7%

Reported in $\mu\text{g}/\text{kg}$ (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene 67.3%
 d14-Dibenzo (a,h) anthracen 82.7%



ORGANICS ANALYSIS DATA SHEET
 PSDDA Semivolatiles by SW8270 GC/MS
 Page 1 of 1

Sample ID: Comp CU
 SAMPLE

Lab Sample ID: OF06A
 LIMS ID: 08-34190
 Matrix: Sediment
 Data Release Authorized: *[Signature]*
 Reported: 01/06/09

QC Report No: OF06-Newfields Northwest
 Project: Marina Park
 NA
 Date Sampled: 12/08/08
 Date Received: 12/17/08

Date Extracted: 12/30/08
 Date Analyzed: 01/05/09 15:59
 Instrument/Analyst: NT4/LJR
 GPC Cleanup: No

Sample Amount: 26.2 g-dry-wt
 Final Extract Volume: 0.5 mL
 Dilution Factor: 1.00
 Percent Moisture: 22.6%

CAS Number	Analyte	RL	Result
131-11-3	Dimethylphthalate	19	< 19 U
84-66-2	Diethylphthalate	19	< 19 U
85-68-7	Butylbenzylphthalate	19	< 19 U
117-81-7	bis(2-Ethylhexyl)phthalate	19	< 19 U
117-84-0	Di-n-Octyl phthalate	19	< 19 U

Reported in µg/kg (ppb)

Semivolatile Surrogate Recovery

d5-Nitrobenzene	68.4%
2-Fluorobiphenyl	76.0%
d14-p-Terphenyl	79.2%
d4-1,2-Dichlorobenzene	64.4%



ORGANICS ANALYSIS DATA SHEET
 PSDDA Semivolatiles by SW8270 GC/MS
 Page 1 of 1

Sample ID: Comp CL
 SAMPLE

Lab Sample ID: OF06B
 LIMS ID: 08-34191
 Matrix: Sediment
 Data Release Authorized: *[Signature]*
 Reported: 01/06/09

QC Report No: OF06-Newfields Northwest
 Project: Marina Park
 NA
 Date Sampled: 12/08/08
 Date Received: 12/17/08

Date Extracted: 12/30/08
 Date Analyzed: 01/05/09 16:33
 Instrument/Analyst: NT4/LJR
 GPC Cleanup: No

Sample Amount: 26.3 g-dry-wt
 Final Extract Volume: 0.5 mL
 Dilution Factor: 1.00
 Percent Moisture: 11.0%

CAS Number	Analyte	RL	Result
131-11-3	Dimethylphthalate	19	< 19 U
84-66-2	Diethylphthalate	19	< 19 U
85-68-7	Butylbenzylphthalate	19	< 19 U
117-81-7	bis(2-Ethylhexyl)phthalate	19	< 19 U
117-84-0	Di-n-Octyl phthalate	19	< 19 U

Reported in $\mu\text{g}/\text{kg}$ (ppb)

Semivolatile Surrogate Recovery

d5-Nitrobenzene	58.4%
2-Fluorobiphenyl	59.2%
d14-p-Terphenyl	68.8%
d4-1,2-Dichlorobenzene	45.6%



ORGANICS ANALYSIS DATA SHEET
 PSDDA Semivolatiles by SW8270 GC/MS
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Sample ID: LA-3 Ref
 SAMPLE

Lab Sample ID: OF06C
 LIMS ID: 08-34192
 Matrix: Sediment
 Data Release Authorized: *AB*
 Reported: 01/06/09

QC Report No: OF06-Newfields Northwest
 Project: Marina Park
 NA
 Date Sampled: 12/08/08
 Date Received: 12/17/08

Date Extracted: 12/30/08
 Date Analyzed: 01/05/09 17:07
 Instrument/Analyst: NT4/LJR
 GPC Cleanup: No

Sample Amount: 25.2 g-dry-wt
 Final Extract Volume: 0.5 mL
 Dilution Factor: 1.00
 Percent Moisture: 52.5%

CAS Number	Analyte	RL	Result
131-11-3	Dimethylphthalate	20	< 20 U
84-66-2	Diethylphthalate	20	< 20 U
85-68-7	Butylbenzylphthalate	20	< 20 U
117-81-7	bis(2-Ethylhexyl)phthalate	20	< 20 U
117-84-0	Di-n-Octyl phthalate	20	< 20 U

Reported in $\mu\text{g}/\text{kg}$ (ppb)

Semivolatile Surrogate Recovery

d5-Nitrobenzene	54.8%
2-Fluorobiphenyl	62.4%
d14-p-Terphenyl	66.0%
d4-1,2-Dichlorobenzene	50.4%

ORGANICS ANALYSIS DATA SHEET
PSDDA Semivolatiles by SW8270 GC/MS
Page 1 of 1

Sample ID: MB-123008
METHOD BLANK

Lab Sample ID: MB-123008
LIMS ID: 08-34190
Matrix: Sediment
Data Release Authorized: *[Signature]*
Reported: 01/06/09

QC Report No: OF06-Newfields Northwest
Project: Marina Park
NA
Date Sampled: NA
Date Received: NA

Date Extracted: 12/30/08
Date Analyzed: 01/05/09 14:52
Instrument/Analyst: NT4/LJR
GPC Cleanup: No

Sample Amount: 25.0 g
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00
Percent Moisture: NA

CAS Number	Analyte	RL	Result
131-11-3	Dimethylphthalate	20	< 20 U
84-66-2	Diethylphthalate	20	< 20 U
85-68-7	Butylbenzylphthalate	20	< 20 U
117-81-7	bis(2-Ethylhexyl)phthalate	20	< 20 U
117-84-0	Di-n-Octyl phthalate	20	< 20 U

Reported in $\mu\text{g}/\text{kg}$ (ppb)

Semivolatile Surrogate Recovery

d5-Nitrobenzene	60.0%
2-Fluorobiphenyl	64.8%
d14-p-Terphenyl	83.2%
d4-1,2-Dichlorobenzene	58.0%



ORGANICS ANALYSIS DATA SHEET
 PSDDA Semivolatiles by SW8270 GC/MS
 Page 1 of 1

Sample ID: LCS-123008
 LAB CONTROL

Lab Sample ID: LCS-123008
 LIMS ID: 08-34190
 Matrix: Sediment
 Data Release Authorized: *[Signature]*
 Reported: 01/06/09

QC Report No: OF06-Newfields Northwest
 Project: Marina Park
 Date Sampled: 12/08/08
 Date Received: 12/17/08

Date Extracted: 12/30/08
 Date Analyzed: 01/05/09 15:25
 Instrument/Analyst: NT4/LJR
 GPC Cleanup: NO

Sample Amount: 25.0 g
 Final Extract Volume: 0.5 mL
 Dilution Factor: 1.00
 Percent Moisture: NA

Analyte	Lab Control	Spike Added	Recovery
Dimethylphthalate	400	500	80.0%
Diethylphthalate	427	500	85.4%
Butylbenzylphthalate	388	500	77.6%
bis(2-Ethylhexyl)phthalate	397	500	79.4%
Di-n-Octyl phthalate	401	500	80.2%

Semivolatile Surrogate Recovery

d5-Nitrobenzene	57.2%
2-Fluorobiphenyl	62.8%
d14-p-Terphenyl	74.0%
d4-1,2-Dichlorobenzene	50.4%

Results reported in µg/kg

SW8270 SEMIVOLATILES SOIL/SEDIMENT SURROGATE RECOVERY SUMMARY

Matrix: Sediment

QC Report No: OF06-Newfields Northwest
Project: Marina Park

Client ID	NBZ	FBP	TPH	DCB TOT	OUT
MB-123008	60.0%	64.8%	83.2%	58.0%	0
LCS-123008	57.2%	62.8%	74.0%	50.4%	0
Comp CU	68.4%	76.0%	79.2%	64.4%	0
Comp CL	58.4%	59.2%	68.8%	45.6%	0
LA-3 Ref	54.8%	62.4%	66.0%	50.4%	0

	LCS/MB LIMITS	QC LIMITS
(NBZ) = d5-Nitrobenzene	(37-85)	(29-87)
(FBP) = 2-Fluorobiphenyl	(39-82)	(32-88)
(TPH) = d14-p-Terphenyl	(38-105)	(21-97)
(DCB) = d4-1,2-Dichlorobenzene	(33-79)	(25-82)

Prep Method: SW3550B
Log Number Range: 08-34190 to 08-34192

Appendix C
Benthic Toxicity Tests
Data Sheets and Supporting Information



10 DAY SOLID PHASE TEST DATA

CLIENT	PROJECT	SPECIES	TEST START DATE	TEST END DATE	PROTOCOL
City of Newport Beach	Marina Park	Ampelisca abdida	Port Gamble	19Dec08	USEPA/USCOE 1991
NEWFIELDS JOB NUMBER	PROJECT MANAGER	NEWFIELDS LABORATORY DILUTION WATER BATCH	START TIME	END TIME	
1105-005-860	B. Gardner	Port Gamble	FSW121808.01	15:20	

CLIENT/NEWFIELDS ID	DAY	REP	D.O. (mg/L)		TEMP (°C)		SALINITY (ppt)		pH (pH units)		TECH.	Date
			> 4.6	meter	20 ± 1	TEMP	30 ± 2	SALINITY	7.8 ± 0.5	pH		
Control /	0	1	3	5.3	3	18.9	3	30	27	3	7.9	12/19
Control /	0	2	1	6.4	1	18.8	1	30	27	1	7.9	
Control /	0	3	1	5.9	1	19.1	1	30	27	1	7.7	
Control /	0	4	1	6.3	1	19.1	1	30	27	1	7.8	
Control /	0	5	1	5.6	1	18.9	1	30	22	1	7.9	
Control /	1	1	3	7.2	3	19.4	3	29		3	8.0	12/20
Control /	2	2	3	6.9	3	19.5	3	30		3	8.1	12/21
Control /	3	3	3	6.8	3	19.5	3	30		3	7.8	12/22
Control /	4	4	3	6.8	3	19.4	3	31		3	7.9	12-23
Control /	5	5	3	6.8	3	19.4	3	30		3	8.2	12/24
Control /	6	1	3	6.6	3	19.4	3	29		1	8.1	12/25
Control /	7	2	3	6.2	3	19.3	3	29		3	7.7	12/26
Control /	8	3	3	7.3	3	18.6	3	30		3	8.0	12/27
Control /	9	4	3	6.8	3	19.1	3	30		3	8.0	12/28
Control /	10	1	3	5.8	3	19.6	3	31		3	8.5	12/29
Control /	10	2	1	5.8	1	19.1	1	31		1	8.5	
Control /	10	3	1	5.7	1	19.1	1	31		1	8.4	
Control /	10	4	1	5.8	1	19.0	1	32		1	8.4	
Control /	10	5	1	5.8	1	19.0	1	31		1	8.4	

① Sal fac low renewed w/ Sea water w/ higher Sal 12/19/08



10 DAY SOLID PHASE TEST DATA

CLIENT	City of Newport Beach	PROJECT	Marina Park	SPECIES	Ampelisca abdida	TEST START DATE	Port Gamble	TEST START DATE	19Dec08	TEST END DATE	29Dec08
NEWFIELDS JOB NUMBER	1105-005-860	PROJECT MANAGER	B. Gardiner	NEWFIELDS LABORATORY DILUTION WATER BATCH	Port Gamble	FSW121808.01	START TIME			END TIME	
<p style="text-align: center;">WATER QUALITY DATA</p>											

CLIENT/NEWFIELDS ID	DAY	REF	D.O. (mg/L)		meter	TEMP	TEMP	SALINITY	SALINITY	meter	pH (pH units)	pH	TECH.	Date
			> 4.6	mg/L										
LA-3 Reference /	0	1	3	7.0	3	19.2	3	31	3	3	8.1			12/19
LA-3 Reference /	0	2	3	7.0	3	19.3	3	31	3	3	8.1			
LA-3 Reference /	0	3	3	6.9	3	19.1	3	31	3	3	8.1			
LA-3 Reference /	0	4	3	6.9	3	19.2	3	31	3	3	8.0			
LA-3 Reference /	0	5	3	7.0	3	19.1	3	31	3	3	8.2			
LA-3 Reference /	1	1	3	7.2	3	19.5	3	31	3	3	8.0	BR		12/20
LA-3 Reference /	2	2	3	7.0	3	19.10	3	32	3	3	8.2	MWB		12/21
LA-3 Reference /	3	3	3	6.9	3	19.4	3	33	3	3	8.1	MWB		12/22
LA-3 Reference /	4	4	3	6.8	3	19.4	3	33	3	3	8.1	BP		12/23
LA-3 Reference /	5	5	3	6.8	3	19.3	3	33	3	3	8.1	Z		12/24
LA-3 Reference /	6	1	3	6.7	3	19.4	3	31	1	3	8.1	BSB		12/25
LA-3 Reference /	7	2	3	6.8	3	19.3	3	32	3	3	7.8	MR		12/26
LA-3 Reference /	8	3	3	7.7	3	18.3	3	33	3	3	8.0	T		12/27
LA-3 Reference /	9	4	3	7.0	3	19.0	3	33	3	3	7.9	T		12/28
LA-3 Reference /	10	1	3	6.0	3	19.0	3	36	3	3	8.4	Z		12/29
LA-3 Reference /	10	2	3	5.9	3	19.1	3	35	3	3	8.3			
LA-3 Reference /	10	3	3	5.8	3	19.1	3	34	3	3	8.3			
LA-3 Reference /	10	4	3	5.7	3	19.2	3	33	3	3	8.3			
LA-3 Reference /	10	5	3	5.8	3	19.1	3	35	3	3	8.3			



10 DAY SOLID PHASE TEST DATA

CLIENT	PROJECT	SPECIES	TEST START DATE	TEST START DATE	PROTOCOL
City of Newport Beach	Marina Park	<i>Amphiscia abdida</i>	Port Gamble	19Dec08	USEPA/USCOE 1991
NEWFIELDS JOB NUMBER 1105-005-860	PROJECT MANAGER B. Gardiner	NEWFIELDS LABORATORY DILUTION WATER BATCH Port Gamble	FSW121808.01	TEST END DATE 29Dec08	

WATER QUALITY DATA

CLIENT/NEWFIELDS ID	DAY	REP	D.O. (mol/L)		TEMP (°C)		SALINITY (ppt)		pH (pH units)		TECH.	Date
			> 4.6	mg/L	20 ± 1	TEMP	meter	SALINITY	meter	unit		
Comp C-U/	0	1	3	7.1	19.2	3	31	3	8.1	✓	12/19	
Comp C-U/	0	2	1	7.1	19.1	3	31	3	8.1	✓		
Comp C-U/	0	3	1	7.0	19.3	3	31	3	8.1	✓		
Comp C-U/	0	4	1	7.2	19.2	3	31	3	8.1	✓		
Comp C-U/	0	5	1	7.1	19.1	3	31	3	8.1	✓		
Comp C-U/	1	1	3	7.2	19.9	3	31	3	8.0	PH	12/20	
Comp C-U/	2	2	3	7.0	19.6	3	31	3	8.1	MWB	12/21	
Comp C-U/	3	3	3	6.9	19.5	3	32	3	8.2	MWB	12/22	
Comp C-U/	4	4	3	6.9	19.5	3	32	3	8.1	SP	12/23	
Comp C-U/	5	5	3	6.9	19.3	3	33	3	8.2	✓	12/24	
Comp C-U/	6	1	3	6.5	19.4	3	31	1	8.0	ROTE	12/25	
Comp C-U/	7	2	3	6.0	19.3	3	32	3	7.7	MWP	12/26	
Comp C-U/	8	3	3	8.0	17.8	3	33	3	8.0	T	12/27	
Comp C-U/	9	4	3	6.8	19.0	3	32	3	8.0	T	12/28	
Comp C-U/	10	1	3	5.7	19.2	3	33	3	8.3	✓	12/29	
Comp C-U/	10	2	1	5.9	19.1	3	34	3	8.3	✓		
Comp C-U/	10	3	1	5.8	19.1	3	35	3	8.3	✓		
Comp C-U/	10	4	1	5.7	19.2	3	33	3	8.2	✓		
Comp C-U/	10	5	1	5.5	19.1	3	33	3	8.2	✓		



10 DAY SOLID PHASE TEST DATA

CLIENT	PROJECT	SPECIES	TEST START DATE	TEST START DATE	PROTOCOL
City of Newport Beach	Marina Park	Ampelisca abdida	Port Gamble	19Dec08	USEPAUSCOE 1991
NEWFIELDS JOB NUMBER	PROJECT MANAGER	NEWFIELDS LABORATORY	DILUTION WATER BATCH	START TIME	TEST END DATE
1105-005-860	B. Gardner	Port Gamble	FSW121808.01		29Dec08

WATER QUALITY DATA

CLIENT/NEWFIELDS ID	DAY	REF	D.O. (mg/L)		TEMP (°C)		SALINITY (ppt)		pH (pH units)		TECH.	Date
			> 4.6	D.O.	20 ± 1	TEMP	30 ± 2	SALINITY	7.8 ± 0.5	pH		
Comp C-L/	0	1	3	7.0	3	19.1	3	31	3	8.1	✓	12/19
Comp C-L/	0	2	1	7.0	1	19.1	3	31	1	8.1	✓	
Comp C-L/	0	3	1	7.0	1	19.3	3	31	1	8.1	✓	
Comp C-L/	0	4	1	6.9	1	19.2	3	31	1	8.1	✓	
Comp C-L/	0	5	1	7.0	1	19.2	3	31	1	8.1	✓	
Comp C-L/	1	1	3	7.2	3	19.5	3	31	3	8.1	DH	12/20
Comp C-L/	2	2	3	7.0	3	19.6	3	31	3	8.1	MWB	12/21
Comp C-L/	3	3	3	6.5	3	19.4	3	32	3	8.2	MWB	12/22
Comp C-L/	4	4	3	6.9	3	19.3	3	32	3	8.1	BP	12-23
Comp C-L/	5	5	3	6.8	3	19.4	3	32	3	8.2	✓	12/24
Comp C-L/	6	1	3	6.6	3	19.4	3	31	1	8.0	bus	12/25
Comp C-L/	7	2	3	6.3	3	19.5	3	32	3	7.8	MP	12/26
Comp C-L/	8	3	3	8.0	3	18.0	3	33	3	8.0	TS	12/27
Comp C-L/	9	4	3	6.8	3	19.1	3	33	3	8.0	✓	12/28
Comp C-L/	10	1	3	5.8	3	19.1	3	34	3	8.3	✓	12/29
Comp C-L/	10	2	1	5.8	1	19.1	3	34	1	8.3	✓	
Comp C-L/	10	3	1	6.0	1	19.1	3	33	1	8.2	✓	
Comp C-L/	10	4	1	5.9	1	19.1	3	33	1	8.2	✓	
Comp C-L/	10	5	1	6.0	1	19.1	3	35	1	8.2	✓	

DWC 12/19/08 ✓



10 DAY SOLID PHASE TEST DATA

CLIENT	PROJECT	NEWFIELDS JOB NO.	PROJECT MAN.	NEWFIELDS LAB	PROTOCOL	SPECIES
City of Newport Beach	Marina Park	1105-005-860	B. Gardiner	Port Gamble Bath 7	USEPAUSCOE 1991	Ampelisca abdida

ENDPOINT DATA & OBSERVATIONS

#E = Emergence
 #M = Number of Mortality
 G = Growth
 (fungal, bacterial, or algal)
 D = No Air Flow (DO?)
 N = Normal

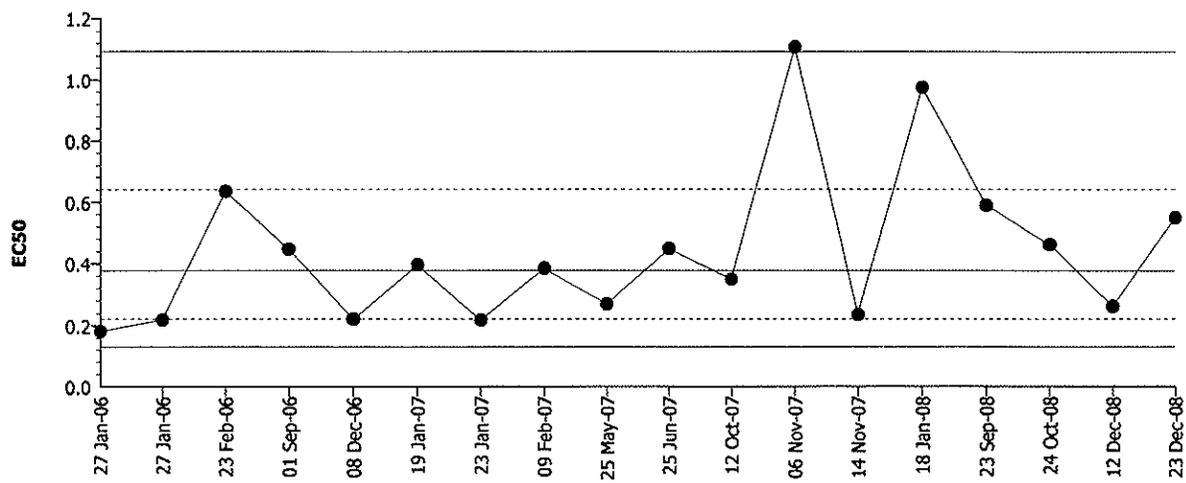
INITIAL # OF ORGANISMS
 20

CLIENT/NEWFIELDS ID	REP	JAR #	INITIAL #	DAY 1	DAY 2	DAY 3	DAY 4	DAY 5	DAY 6	DAY 7	DAY 8	DAY 9	DAY 10	NUMBER REMAINING
				DATE										
Control /	1	20		N	N	N	N	N	2	N	N	N	N	18
	2			N	N	N	N	N	2	N	N	N	N	18
	3			N	N	N	N	N	2	N	N	N	N	18
	4			N	N	N	N	N	2	N	N	N	N	18
	5			N	N	N	N	N	2	N	N	N	N	18
LA-3 Reference /	1	11		N	N	N	N	N	1E/1M	N	N	N	N	19
	2			N	N	N	N	N	2	N	N	N	N	18
	3			N	N	N	N	N	1M	N	N	N	N	18
	4			N	N	N	N	N	2	N	N	N	N	18
	5			N	N	N	N	N	2	N	N	N	N	18
Comp C-U /	1	15		N	N	N	N	N	1M	N	N	N	N	17
	2			N	N	N	N	N	2	N	N	N	N	17
	3			N	N	N	N	N	2	N	N	N	N	17
	4			N	N	N	N	N	2	N	N	N	N	17
	5			N	N	N	N	N	1M	N	N	N	N	16
Comp C-L /	1			N	N	N	N	N	2	N	N	N	N	17
	2			N	N	N	N	N	2	N	N	N	N	17
	3			N	N	N	N	N	2	N	N	N	N	17
	4			N	N	N	N	N	2	N	N	N	N	17
	5			N	N	N	N	N	2	N	N	N	N	18

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 17
 17
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Reference Toxicant 96-h Acute Survival Test NewFields

Test Type: Survival Organism: Ampelisca abdita (Amphipod) Material: Cadmium chloride
 Protocol: PSEP (1995) Endpoint: Proportion Survived Source: Reference Toxicant-REF



Mean: 0.37686 Count: 17 -1s Warning Limit: 0.22126 -2s Action Limit: 0.12990
 Sigma: CV: 70.33% +1s Warning Limit: 0.64189 +2s Action Limit: 1.09330

Quality Control Data

Point	Year	Month	Day	Data	Delta	Sigma	Warning	Action	Test Link	Analysis
1	2006	Jan	27	0.18090	-0.19595	-1.37810	(-)		07-5435-8129	06-2014-1066
2			27	0.21846	-0.15839	-1.02383	(-)		02-3876-2955	12-1597-4541
3		Feb	23	0.63498	0.25812	0.97968			17-3687-3273	06-7672-2441
4		Sep	1	0.44694	0.07009	0.32029			11-8706-7493	01-2691-7469
5		Dec	8	0.22112	-0.15574	-1.00114	(-)		01-8163-5765	09-7294-9655
6	2007	Jan	19	0.39559	0.01873	0.09108			05-1919-0451	04-7876-6509
7			23	0.21727	-0.15958	-1.03411	(-)		13-4550-6899	02-3067-5161
8		Feb	9	0.38474	0.00788	0.03886			04-8872-6896	02-4257-0063
9		May	25	0.26923	-0.10763	-0.63150			16-5938-6055	08-1846-1770
10		Jun	25	0.44847	0.07161	0.32669			02-7818-3113	07-6434-4735
11		Oct	12	0.34850	-0.02835	-0.14687			07-2723-0368	03-4167-3848
12		Nov	6	1.10809	0.73124	2.02523	(+)	(+)	02-8822-1003	13-2266-5070
13			14	0.23515	-0.14171	-0.88567			10-0087-4493	11-2555-9069
14	2008	Jan	18	0.97369	0.59684	1.78244	(+)		16-7804-5373	13-2534-3341
15		Sep	23	0.58928	0.21243	0.83945			03-2847-7880	18-3138-3652
16		Oct	24	0.46182	0.08496	0.38176			14-6257-4714	01-6783-1439
17		Dec	12	0.26177	-0.11509	-0.68426			17-4134-1431	08-7847-9030
18			23	0.54863	0.17178	0.70522			21-3281-1872	04-2474-4340

CETIS Analysis Detail

Reference Toxicant 96-h Acute Survival Test NewFields

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Proportion Survived	Comparison	21-3281-1872	21-3281-1872	14 Jan-09 10:11 AM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Dunnett's Multiple Comparison	C > T	Angular (Corrected)		0.25	0.5	400	0.35355	39.54%

Group Comparisons

Control	vs	Conc-mg/L	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Water		0.125	1.62492	2.46559	0.1793	0.36234	Non-Significant Effect
		0.25	1.65966	2.46559	0.1708	0.36234	Non-Significant Effect
		0.5	3.0498	2.46559	0.0193	0.36234	Significant Effect
		1	4.97255	2.46559	0.0010	0.36234	Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.8975322	0.2243831	4	6.93	0.00613	Significant Effect
Error	0.3239474	0.0323947	10			
Total	1.22147965	0.2567778	14			

ANOVA Assumptions

Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Bartlett	1.99337	13.27670	0.73698	Equal Variances
Distribution	Shapiro-Wilk W	0.94443		0.44135	Normal Distribution

Data Summary

Conc-mg/L	Control Type	Count	Original Data				Transformed Data			
			Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	3	0.80000	0.70000	1.00000	0.17321	1.13144	0.99116	1.41202	0.24298
0.125		3	0.60000	0.50000	0.80000	0.17321	0.89265	0.78540	1.10715	0.18576
0.25		3	0.60000	0.50000	0.70000	0.10000	0.88754	0.78540	0.99116	0.10289
0.5		3	0.40000	0.30000	0.50000	0.10000	0.68325	0.57964	0.78540	0.10289
1		3	0.16667	0.00000	0.30000	0.15275	0.40069	0.15878	0.57964	0.21738

Data Detail

Conc-mg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	0.70000	0.70000	1.00000							
0.125		0.50000	0.50000	0.80000							
0.25		0.50000	0.60000	0.70000							
0.5		0.50000	0.40000	0.30000							
1		0.20000	0.30000	0.00000							

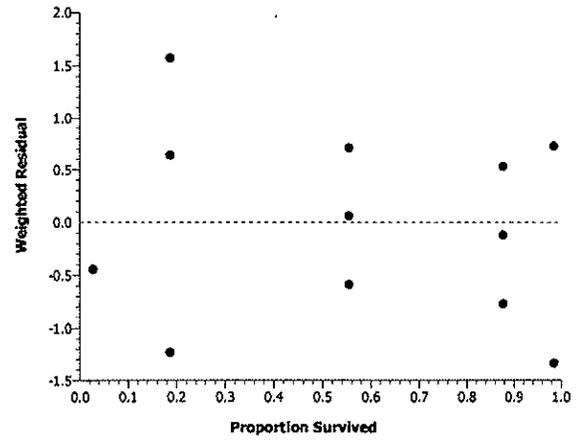
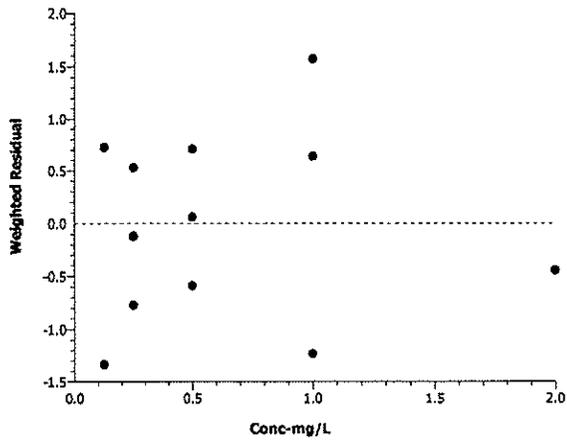
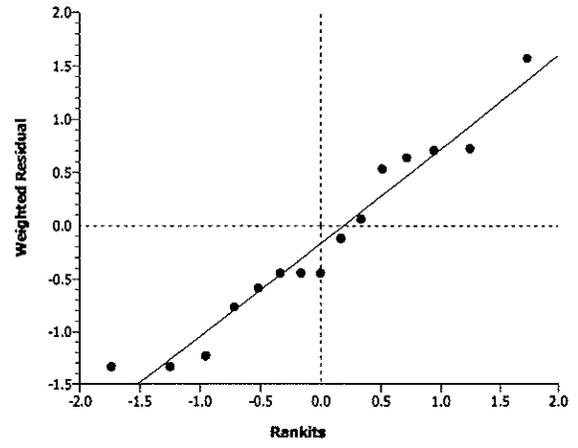
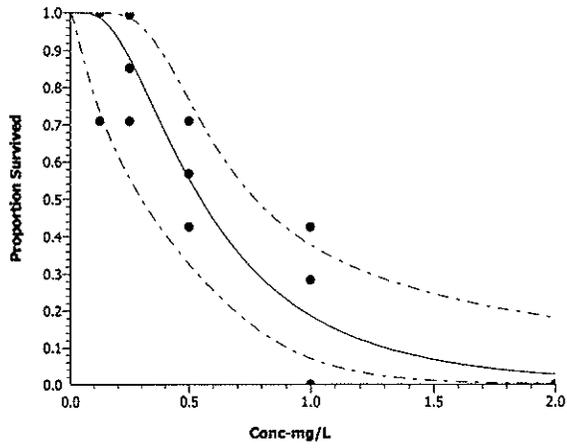
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CETIS Analysis Detail

Reference Toxicant 96-h Acute Survival Test							NewFields		
Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version				
Proportion Survived	Linear Regression	21-3281-1872	21-3281-1872	14 Jan-09 10:12 AM	CETISv1.1.2				
Linear Regression Options									
Model Function	Threshold Option	Threshold	Threshold Opt	Reweighted	Pooled Groups	Het Corr			
Log-Normal [NED=A+B*log(X)]	Control Threshold	0.2	Yes	Yes	No	No			
Regression Summary									
Iters	Log Likelihood	Mu	Sigma	G	Chi-Sq	Critical	P-Value	Decision(0.05)	
36	-75.73683	1.72745	0.29335	0.25350	10.82990	22.36203	0.62506	Non-Significant Heterogeneity	
Point Estimates									
% Effect	Conc-mg/L	95% LCL	95% UCL						
10	0.230857	0.05868554	0.379844						
15	0.2724253	0.08116146	0.4279859						
20	0.3107383	0.1048226	0.4714451						
25	0.3478742	0.1303138	0.5131532						
40	0.4623413	0.2229078	0.6428301						
50	0.5486319	0.3036974	0.7462605						
Regression Parameters									
Parameter	Estimate	Std Error	95% LCL	95% UCL	t Statistic	P-Value	Decision(0.05)		
Threshold	0.2953582	0.06229078	0.1732683	0.4174482	4.742	0.00039	Significant		
Slope	3.408944	0.8756865	1.692598	5.125289	3.893	0.00185	Significant		
Intercept	5.888776	0.2613715	5.376488	6.401064	22.530	0.00000	Significant		
Residual Analysis									
Attribute	Method	Statistic	Critical	P-Value	Decision(0.05)				
Variances	Modified Levene	3.93714	3.47805	0.03586	Unequal Variances				
Distribution	Shapiro-Wilk W	0.9449845		0.44918	Normal Distribution				
Data Summary									
Conc-mg/	Control Type	Count	Calculated Variate(A/B)						
			Mean	Minimum	Maximum	SE	SD	A	B
0	Dilution Water	3	0.80000	0.70000	1.00000	0.03536	0.17321	24	30
0.125		3	0.60000	0.50000	0.80000	0.03536	0.17321	18	30
0.25		3	0.60000	0.50000	0.70000	0.02041	0.10000	18	30
0.5		3	0.40000	0.30000	0.50000	0.02041	0.10000	12	30
1		3	0.16667	0.00000	0.30000	0.03118	0.15275	5	30
2		3	0.00000	0.00000	0.00000	0.00000	0.00000	0	30

CETIS Analysis Detail

Graphics





REFERENCE TOXICANT TEST WATER QUALITY DATASHEET

CLIENT City of Newport Beach NEWFIELDS JOB NUMBER 1105-005-860 TEST ID PO80418.36	PROJECT Marina Park PROJECT MANAGER B. Gardiner LOT #: 06510 TC	SPECIES Ampelisca abdida	NEWFIELDS LABORATORY Port Gamble Bath 7 INIT CR
QUANTITY OF STOCK TARGET: 0.3 mL ACTUAL: 0.2997 mL		QUANTITY OF DILUENT: 1500mL ACTUAL: 1500.0 mL	DATE PREP 12/23/08
TEST START DATE 23Dec08		TEST END DATE 27Dec08	TIME 1200

WATER QUALITY DATA

DILTN.WAT.BATCH	TEMP REC#	REFERENCE TOX. MATERIAL		REFERENCE TOXICANT		LOT NO.	96-H LC ₅₀
		cadmium chloride	cadmium	cadmium	cadmium		
TEST CONDITIONS							
CLIENT/ NEWFIELDS ID	CONCENTRATION		DO (mg/L)	TEMP (C)	SAL (ppt)	pH	TECHNICIAN
	value	units					
Ref.Tox.-cadmium	0	mg/L	3 7.0	3 19.4	3 28	3 7.7	DP
			3 6.6	3 19.2	3 29	3 7.7	TS
Ref.Tox.-cadmium	0.125	mg/L	3 7.1	3 19.5	3 28	3 7.7	DP
			3 6.7	3 19.3	3 29	3 7.9	TS
Ref.Tox.-cadmium	0.25	mg/L	3 7.1	3 19.4	3 28	3 7.7	DP
			3 6.6	3 19.2	3 29	3 7.9	TS
Ref.Tox.-cadmium	0.5	mg/L	3 7.1	3 19.4	3 28	3 7.7	DP
			3 6.7	3 19.2	3 29	3 7.9	TS
Ref.Tox.-cadmium	1	mg/L	3 7.0	3 19.4	3 28	3 7.7	DP
			3 6.5	3 19.2	3 29	3 7.9	TS
Ref.Tox.-cadmium	2	mg/L	3 7.0	3 19.4	3 28	3 7.7	DP
							TS



REFERENCE TOXICANT TEST SURVIVAL DATASHEET

SPECIES	<i>Ampelisca abdida</i>
NEWFIELDS LABORATORY	Port Gamble Bath 7
PROTOCOL	USEPA/USCOE 1991

CLIENT	PROJECT	NEWFIELDS JOB #	PROJECT MANAGER
City of Newport Beach	Marina Park	1105-005-860	B. Gardiner

SURVIVAL & BEHAVIOR DATA

OBSERVATION KEY N = normal LOE = loss of equilibrium Q = quiescent DC = discoloration NB = no body F = Floating on Surface INITIAL # OF ORGANISMS				DAY 1			DAY 2			DAY 3			DAY 4			
				DATE			DATE			DATE			DATE			
				TECHNICIAN			TECHNICIAN			TECHNICIAN			TECHNICIAN			
CLIENT/NEWFIELDS ID	CONC.		REP	INITIAL NUMBER	#ALIVE	#DEAD	OBS	#ALIVE	#DEAD	OBS	#ALIVE	#DEAD	OBS	#ALIVE	#DEAD	OBS
	value	units														
Ref. Tox. - cadmium	0 mg/L		1		10	0	5FOS	10	0	1FOS	9	1	1FOS	7	2	2FOS
			2		10	0	4FOS	9	1	2FOS	9	0	2FOS	7	2	1FOS
			3		10	0	2FOS	10	1	4FOS	10	0	2FOS	10	0	N
Ref. Tox. - cadmium	0.125 mg/L		1		9	0	1NB	8	2	2FOS	6	1	1NB	5	1	2FOS
			2		8	2	2FOS	8	0	2FOS	6	2	1FOS	5	1	2FOS
			3		9	1	1FOS	9	0	N	8	1	N	8	0	N
Ref. Tox. - cadmium	0.25 mg/L		1		10	0	5FOS	6	4	2FOS	5	1	N	5	0	1FOS
			2		9	1	4FOS	9	0	N	7	1	1FOS 1NB	6	1	2FOS
			3		10	0	4FOS	9	1	2FOS	8	1	N	7	1	1FOS
Ref. Tox. - cadmium	0.5 mg/L		1		9	1	5FOS	8	1	2FOS	6	2	2FOS	5	1	1FOS
			2		10	0	4FOS	6	4	3FOS	6	0	1FOS	4	2	1FOS
			3		10	0	3FOS	7	3	3FOS	5	2	2FOS	3	2	N
Ref. Tox. - cadmium	1 mg/L		1		10	0	5FOS	9	1	1FOS	6	2	1FOS 1NB	2	4	1FOS
			2		9	0	5FOS	9	1	4FOS	7	2	1FOS	3	4	N
			3		8	1	1FOS	8	0	1FOS	4	4	2FOS	0	4	2FOS
Ref. Tox. - cadmium	2 mg/L		1		10	0	4FOS	5	5	4FOS	0	5	NA	X		
			2		10	0	5FOS	6	4	5FOS	0	6	↓			
			3		10	0	4FOS	6	4	5FOS	0	6	↓			



ORGANISM RECEIPT LOG

Date: 12/17/08		Time: 1600		NewFields Batch No. JB 8980	
Organism: Ampelisca abdita			Source: John Brezina		
Address: On File				Invoice Attached Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Phone: On File			Contact: John Brezina		
No. Ordered:		No. Received:		Source Batch:	
Condition of Organisms: Good			Approximate Size or Age: Adult		
Shipper: Fed Ex			B of L (Tracking No.) 8662 6888 8980		
Condition of Container: Good			Received By: CR		
Confirmation of ID of Organism: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>				Technician (Initials):	
Notes:					
pH (Units)	Temp. (°C)	D.O. (mg/L)	Conductivity or Salinity (Include Units)	Technician (Initials)	
7.2	9.9°C	39.8	31	CR	
Notes:					



10 DAY SOLID PHASE TEST DATA

CLIENT	PROJECT	SPECIES	TEST START DATE	TEST START DATE	PROTOCOL
City of Newport Beach	Marina Park	<i>Nearthes arenaceodentata</i>	Port Gamble	19Dec08	USEPA/USCOE 1991
NEWFIELDS JOB NUMBER 1105-005-860	PROJECT MANAGER B. Gardiner	NEWFIELDS LABORATORY Port Gamble	DILUTION WATER BATCH FSW121808.01	START TIME 1600	TEST END DATE 29Dec08
					END TIME

CLIENT/NEWFIELDS ID	DAY	REP	D.O. (mg/L)		TEMP (°C)	SALINITY (ppt)	pH (unit)	TECH.	Date
			> 4.6	meter					
Control /	0	1	3	7.0	19.1	31	3	8.1	12/19
Control /	0	2	1	7.1	19.1	31	1	8.1	
Control /	0	3	1	7.0	19.1	31	1	7.9	
Control /	0	4	1	7.1	19.1	31	1	8.0	
Control /	0	5	1	7.1	19.1	31	1	8.1	
Control /	1	1	3	7.2	19.3	31	3	7.9	12/20
Control /	2	2	3	7.1	19.0	31	3	8.2	12/21
Control /	3	3	3	6.9	19.4	32	3	7.9	12/22
Control /	4	4	3	6.9	19.4	32	3	8.0	12-23
Control /	5	5	3	6.9	19.5	32	3	8.2	12/24
Control /	6	1	3	6.6	19.5	30	1	8.0	12/25
Control /	7	2	3	6.6	19.1	32	3	7.7	12/26
Control /	8	3	3	7.9	18.0	32	3	8.2	12/27
Control /	9	4	3	6.8	18.9	33	3	8.0	12/28
Control /	10	1	3	6.8	18.5	34	3	8.1	12/29
Control /	10	2	1	6.9	18.5	32	1	8.2	
Control /	10	3	1	6.7	18.5	33	1	8.2	
Control /	10	4	1	6.9	18.6	33	1	8.2	
Control /	10	5	1	6.8	18.6	33	1	8.2	



10 DAY SOLID PHASE TEST DATA

CLIENT City of Newport Beach NEWFIELDS JOB NUMBER 1105-005-860	PROJECT Marina Park PROJECT MANAGER B. Gardiner	SPECIES <i>Neanthes arenaceodentata</i>	TEST START DATE Port Gamble NEWFIELDS LABORATORY DILUTION WATER BATCH FSW121808.01	TEST START DATE 19Dec08	TEST END DATE 29Dec08
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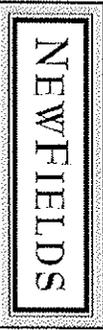
PROTOCOL

USEPA/USCOE 1991

TEST CONDITIONS

WATER QUALITY DATA

CLIENT/NEWFIELDS ID	DAY	REP	D.O. (mol/L)		TEMP (°C)		SALINITY (ppt)		pH (pH units)		TECH.	Date
			> 4.6	meter	20 ± 1	TEMP	30 ± 2	SALINITY	7.8 ± 0.5	pH		
LA-3 Reference /	0	1	3	7.1	3	19.0	3	31	3	8.2	✓	12/19
LA-3 Reference /	0	2	1	7.0	1	19.2	1	31	1	8.2	✓	
LA-3 Reference /	0	3	1	7.1	1	19.1	1	31	1	8.1	✓	
LA-3 Reference /	0	4	1	7.1	1	19.0	1	31	1	8.2	✓	
LA-3 Reference /	0	5	10	7.0	10	19.6	10	31	10	8.1	✓	
LA-3 Reference /	1	1	3	6.9	3	19.4	3	31	3	8.0	BH	12/20
LA-3 Reference /	2	2	3	6.9	3	19.5	3	32	3	8.2	MWB	12/21
LA-3 Reference /	3	3	3	6.9	3	19.5	3	32	3	8.1	MWB	12/22
LA-3 Reference /	4	4	3	6.8	3	19.4	3	33	3	8.1	SP	12/23
LA-3 Reference /	5	5	3	6.8	3	19.2	3	33	3	8.2	✓	12/24
LA-3 Reference /	6	1	3	6.6	3	19.5	3	31	1	8.0	BUSG	12/25
LA-3 Reference /	7	2	3	6.3	3	19.4	3	33	3	7.8	MWP	12/26
LA-3 Reference /	8	3	3	7.3	3	18.0	3	33	3	8.2	TS	12/27
LA-3 Reference /	9	4	3	7.0	3	18.9	3	33	3	8.0	TS	12/28
LA-3 Reference /	10	1	3	6.8	3	18.5	3	33	3	8.0	✓	12/29
LA-3 Reference /	10	2	1	6.8	1	18.5	1	33	1	8.0	✓	
LA-3 Reference /	10	3	1	6.4	1	18.6	1	33	1	8.1	✓	
LA-3 Reference /	10	4	1	6.8	1	18.5	1	33	1	7.9	✓	
LA-3 Reference /	10	5	1	6.9	1	18.5	1	34	1	8.1	✓	



10 DAY SOLID PHASE TEST DATA

CLIENT	PROJECT	SPECIES	TEST START DATE	TEST START DATE	PROTOCOL
City of Newport Beach	Marina Park	Near/fishes arenaceodontata	Port Gamble	19Dec08	USEPA/USCOE 1991
NEWFIELDS JOB NUMBER	PROJECT MANAGER	NEWFIELDS LABORATORY	DILUTION WATER BATCH	START TIME	TEST END DATE
1105-005-860	B. Gardner	Port Gamble	FSW121808.01		29Dec08
END TIME					

CLIENT/NEWFIELDS ID	DAY	REP	D.O. (mg/L)		TEMP	SALINITY	pH (pH units)	TECH.	Date
			> 4.6	meter					
Comp C-U /	0	1	3	7.2	19.1	31	3	8.1	12/19
Comp C-U /	0	2	1	7.2	19.2	31	1	8.1	
Comp C-U /	0	3	1	7.0	19.1	31	1	8.1	
Comp C-U /	0	4	1	7.2	19.2	31	1	8.1	
Comp C-U /	0	5	1	7.0	19.0	31	1	8.1	
Comp C-U /	1	1	3	7.0	19.4	31	3	8.1	12/20
Comp C-U /	2	2	3	6.7	19.4	31	3	7.8	12/21
Comp C-U /	3	3	3	6.6	19.5	32	3	8.1	12/22
Comp C-U /	4	4	3	6.7	19.4	32	3	8.0	12/23
Comp C-U /	5	5	3	6.8	19.5	32	3	8.2	12/24
Comp C-U /	6	1	3	6.6	19.3	31	3	8.1	12/25
Comp C-U /	7	2	3	6.4	19.1	32	3	7.8	12/26
Comp C-U /	8	3	3	7.7	18.3	33	3	8.2	12/27
Comp C-U /	9	4	3	6.6	18.8	32	3	7.9	12/28
Comp C-U /	10	1	3	6.7	18.5	33	3	8.1	12/29
Comp C-U /	10	2	1	6.7	18.5	33	1	8.1	
Comp C-U /	10	3	1	6.8	18.5	33	1	8.1	
Comp C-U /	10	4	1	6.4	18.6	33	1	8.1	
Comp C-U /	10	5	1	6.6	18.7	33	1	9.1	



10 DAY SOLID PHASE TEST DATA

CLIENT	PROJECT	SPECIES	TEST START DATE	TEST START DATE	PROTOCOL
City of Newport Beach	Marina Park	<i>Nearthes arenaceodentata</i>	Port Gamble	19Dec08	USEPA/USCOE 1991
NEWFIELDS JOB NUMBER	PROJECT MANAGER	NEWFIELDS LABORATORY	DILUTION WATER BATCH	START TIME	TEST END DATE
1105-005-860	B. Gardiner	Port Gamble	FSW121808.01		29Dec08

CLIENT/NEWFIELDS ID	DAY	REP	D.O. (mg/L)		TEMP (°C)		SALINITY (ppt)		pH (pH units)		TECH.	Date
			> 4.6	mgl	20 ± 1	°C	30 ± 2	ppt	7.8 ± 0.5	unit		
Comp C-L/	0	1	3	7.0	3	18.8	31	3	8.1			12/19
Comp C-L/	0	2	1	6.9	1	19.1	31	1	8.1			
Comp C-L/	0	3	1	7.1	1	19.0	31	1	8.1			
Comp C-L/	0	4	1	7.2	1	19.1	31	1	8.1			
Comp C-L/	0	5	1	7.0	1	19.2	31	1	8.1			
Comp C-L/	1	1	3	7.1	3	19.4	31	3	8.0	BH		12/20
Comp C-L/	2	2	3	6.8	3	19.5	31	3	8.1	MWB		12/21
Comp C-L/	3	3	3	6.9	3	19.6	32	3	8.2	MWB		12/22
Comp C-L/	4	4	3	6.9	3	19.2	32	3	8.1	TS		12-23
Comp C-L/	5	5	3	6.8	3	19.5	32	3	8.2	TS		12/24
Comp C-L/	6	1	3	6.8	3	19.8	31	1	8.1	BOST		12/25
Comp C-L/	7	2	3	6.3	3	19.1	34	3	7.8	MWP		12/26
Comp C-L/	8	3	3	7.9	3	18.0	34	3	8.2	TS		12/27
Comp C-L/	9	4	3	6.8	3	18.9	35	3	8.0	TS		12/28
Comp C-L/	10	1	3	6.7	3	18.6	33	3	8.1	TS		12/29
Comp C-L/	10	2	1	6.6	1	18.5	33	1	8.2			
Comp C-L/	10	3	1	6.8	1	18.6	34	1	8.1			
Comp C-L/	10	4	1	6.8	1	18.5	33	1	8.1			
Comp C-L/	10	5	1	6.9	1	18.6	33	1	8.2			



Ammonia Analysis Total Ammonia (mg/L)

Client/Project: <i>Newport/Marina Park Neanthes</i>	Organism:	NewFields Test ID:	Test Duration (days):
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PRETEST / INITIAL / FINAL / OTHER (circle one) DAY of TEST: _____
 OVERLYING (OV) / POREWATER (PW) (circle one)

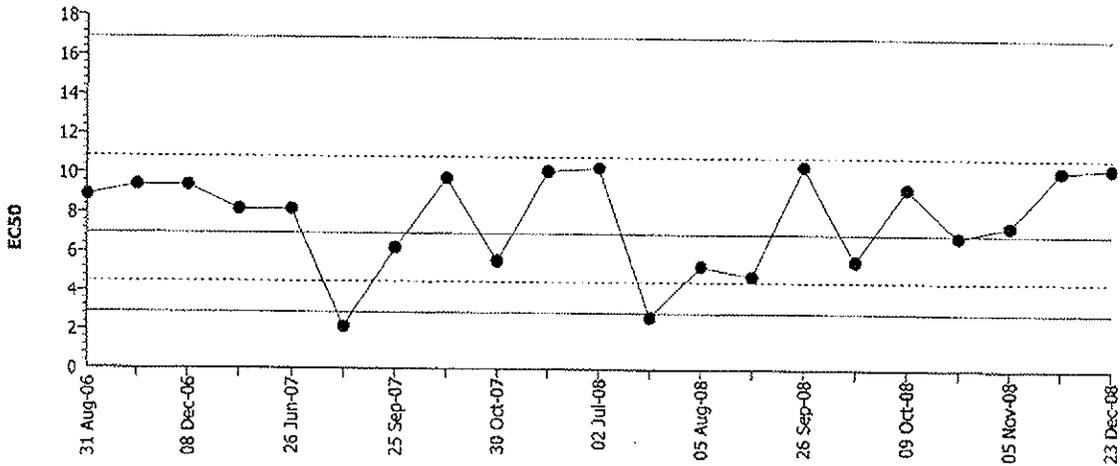
Calibration Standards Temperature		Sample temperature should be within $\pm 1^{\circ}\text{C}$ of standards temperature at time and date of analysis.
Date:	Temperature:	
<i>12/29/08</i>	<i>20.0</i>	

Sample ID or Description	Conc. or Rep	Date of Sampling and Initials	Ammonia Value (mg/L)	Temp °C	Date of Reading and Initials	Sample Preserved (Y/N)	pH	Sal (ppt)	Sulf. mg/L
<i>Control</i>	<i>Surr.</i>	<i>12/29/08 CR</i>	<i><0.5</i>	<i>20</i>	<i>12/29/08 CR</i>	<i>N</i>	<i>7.8</i>	<i>32</i>	
<i>LA-3 Ref</i>	↓	↓	<i><0.5</i>		↓	↓	<i>8.0</i>	<i>33</i>	
<i>Comp C-L</i>	↓	↓	<i><0.5</i>		↓	↓	<i>7.9</i>	<i>34</i>	
<i>Comp C-U</i>	↓	↓	<i><0.5</i>		↓	↓	<i>8.0</i>	<i>33</i>	

CETIS QC Chart

Neanthes 10-d Survival and Growth Sediment Test NewFields

Test Type: Survival-Growth Organism: Neanthes arenaceodentata (Polychaeta) Material: Cadmium chloride
Protocol: PSEP (1995) Endpoint: Proportion Survived Source: Reference Toxicant-REF



Mean: 6.96264 Count: 20 -1s Warning Limit: 4.467 -2s Action Limit: 2.86588
Sigma: CV: 55.87% +1s Warning Limit: 10.8526 +2s Action Limit: 16.9157

Quality Control Data										
Point	Year	Month	Day	Data	Delta	Sigma	Warning	Action	Test Link	Analysis
1	2006	Aug	31	8.86577	1.90313	0.54443			16-7169-3504	00-9849-6979
2		Dec	8	9.37175	2.40911	0.66948			10-5822-0812	10-0140-9364
3			8	9.37175	2.40911	0.66948			10-5822-0812	08-7192-3895
4	2007	May	11	8.16253	1.19989	0.35822			03-7778-9913	06-1785-2165
5		Jun	26	8.16258	1.19994	0.35824			09-6212-3109	14-8493-4946
6		Jul	18	2.13748	-4.82517	-2.66071	(-)	(-)	09-5163-0637	11-9760-1230
7		Sep	25	6.20193	-0.76071	-0.26067			06-6354-6111	12-2113-4941
8		Oct	24	9.76006	2.79742	0.76095			05-9113-1606	14-0319-5260
9			30	5.55412	-1.40852	-0.50923			03-0327-1386	13-6201-5780
10	2008	Feb	17	10.12762	3.16498	0.84424			11-6935-8907	04-7495-8038
11		Jul	2	10.30107	3.33843	0.88250			07-0160-7176	03-3190-0644
12			22	2.65108	-4.31156	-2.17553	(-)	(-)	12-3989-8103	10-4556-3131
13		Aug	5	5.30308	-1.65956	-0.61344			12-5764-3928	08-5080-2403
14			29	4.77241	-2.19023	-0.85100			04-2068-8020	17-2391-7369
15		Sep	26	10.37648	3.41384	0.89893			12-2518-6391	15-3142-3234
16			30	5.55412	-1.40852	-0.50923			14-9908-4079	13-4530-5299
17		Oct	9	9.26124	2.29860	0.64275			06-2717-9387	09-3671-8537
18			23	6.83792	-0.12472	-0.04072			19-3732-1210	02-0490-6958
19		Nov	5	7.37857	0.41593	0.13072			15-0302-6653	14-4382-3985
20		Dec	15	10.20151	3.23887	0.86061			12-5691-1479	14-1608-5886
21			23	10.35175	3.38911	0.89355			17-9927-6897	13-4293-3597

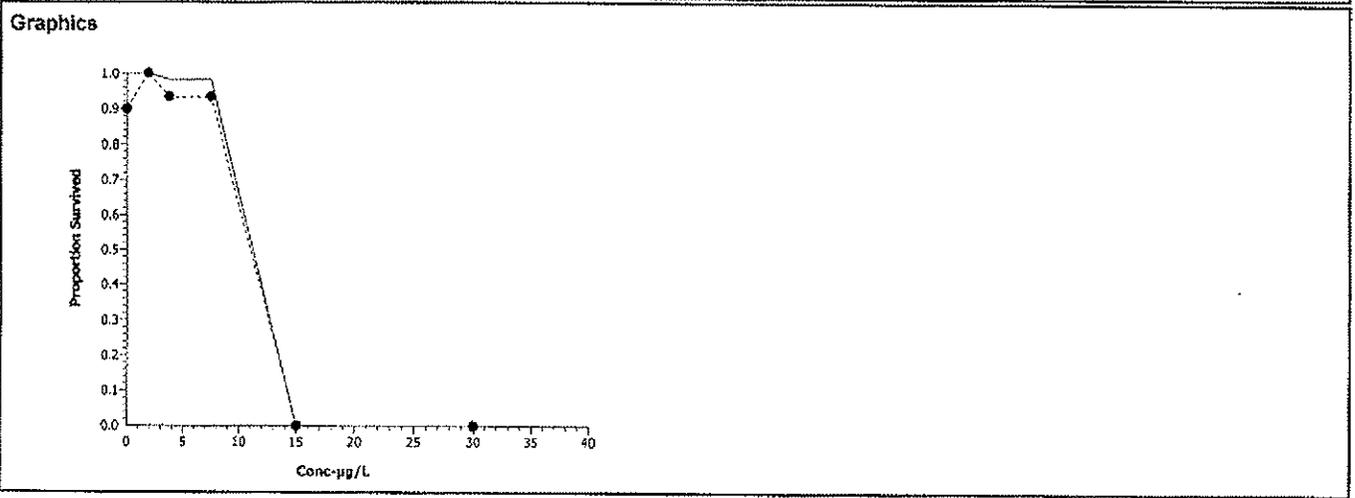
CETIS Analysis Detail

Neanthes 10-d Survival and Growth Sediment Test NewFields

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Proportion Survived	Trimmed Spearman-Kärber	17-9927-6897	17-9927-6897	16 Jan-09 2:25 PM	CETISv1.1.2

Spearman-Kärber Options					Point Estimates		
Threshold Option	Lower Threshold	Trim	Mu	Sigma	EC50/LC50	95% LCL	95% UCL
Control Threshold	0.1	0.00%	1.015014	0.0102043	10.35175	9.87655	10.84982

Data Summary		Calculated Variate(A/B)							
Conc-µg/L	Control Type	Count	Mean	Minimum	Maximum	SE	SD	A	B
0	Dilution Water	3	0.90000	0.80000	1.00000	0.02041	0.10000	27	30
1.875		3	1.00000	1.00000	1.00000	0.00000	0.00000	30	30
3.75		3	0.93333	0.80000	1.00000	0.02357	0.11547	28	30
7.5		3	0.93333	0.80000	1.00000	0.02357	0.11547	28	30
15		3	0.00000	0.00000	0.00000	0.00000	0.00000	0	30
30		3	0.00000	0.00000	0.00000	0.00000	0.00000	0	30



CETIS Analysis Detail

Comparisons: Page 1 of 1
 Report Date: 16 Jan-09 2:25 PM
 Analysis: 02-9671-6281

Neanthes 10-d Survival and Growth Sediment Test NewFields

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version			
Proportion Survived	Comparison	17-9927-6897	17-9927-6897	16 Jan-09 2:25 PM	CETISv1.1.2			
Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Dunnett's Multiple Comparison	C > T	Angular (Corrected)		7.5	15	13.3333	10.6066	24.60%

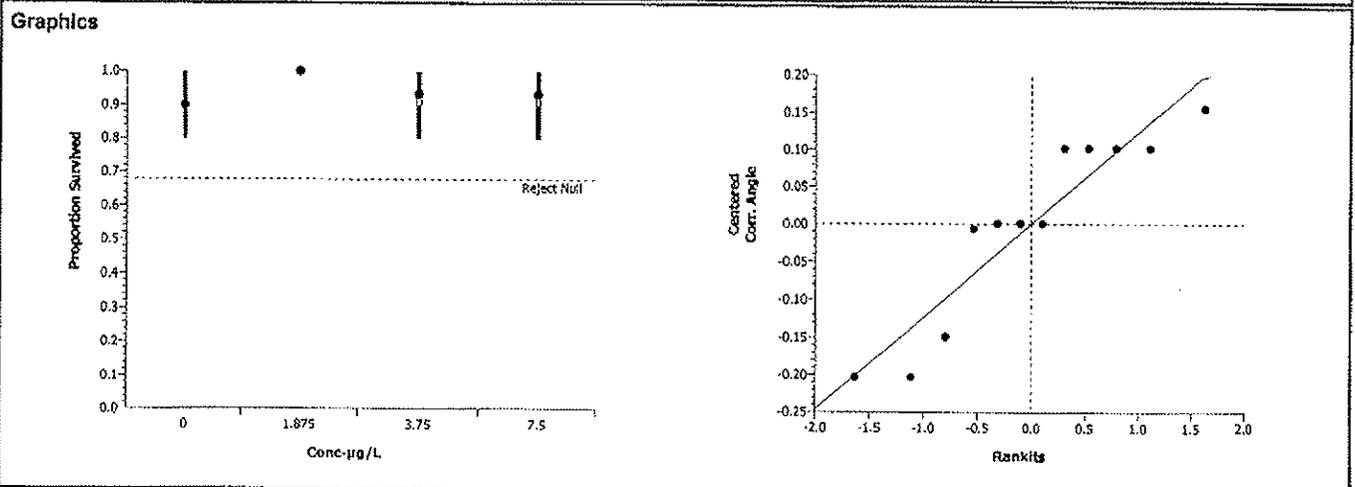
Group Comparisons							
Control	vs	Conc-µg/L	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Water		1.875	-1.3084	2.41651	0.9778	0.28802	Non-Significant Effect
		3.75	-0.4558	2.41651	0.8795	0.28802	Non-Significant Effect
		7.5	-0.4558	2.41651	0.8795	0.28802	Non-Significant Effect

ANOVA Table						
Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.0381566	0.0127189	3	0.60	0.63466	Non-Significant Effect
Error	0.1704716	0.021309	8			
Total	0.20862817	0.0340278	11			

ANOVA Assumptions					
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Modified Levene	1.99523	7.59099	0.19336	Equal Variances
Distribution	Shapiro-Wilk W	0.86246		0.05249	Normal Distribution

Data Summary		Original Data					Transformed Data			
Conc-µg/L	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	3	0.90000	0.80000	1.00000	0.10000	1.25607	1.10715	1.41202	0.15256
1.875		3	1.00000	1.00000	1.00000	0.00000	1.41202	1.41202	1.41202	0.00029
3.75		3	0.93333	0.80000	1.00000	0.11547	1.31039	1.10715	1.41202	0.17602
7.5		3	0.93333	0.80000	1.00000	0.11547	1.31039	1.10715	1.41202	0.17602

Data Detail											
Conc-µg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	0.80000	1.00000	0.90000							
1.875		1.00000	1.00000	1.00000							
3.75		1.00000	1.00000	0.80000							
7.5		0.80000	1.00000	1.00000							



CETIS Data Worksheet

Report Date: 16 Jan-09 2:25 PM
 Link: 17-9927-6897

Neanthes 10-d Survival and Growth Sediment Test NewFields

Start Date: 23 Dec-08 01:00 PM Species: *Neanthes arenaceodentata* Sample Code: 284325800
 Ending Date: 27 Dec-08 12:30 PM Protocol: PSEP (1995) Sample Source: Reference Toxicant
 Sample Date: 23 Dec-08 Material: Cadmium chloride Sample Station: P080418.38

Conc-µg/L	Code	Rep	Pos	# Exposed	# Survived	Total Weight-mg	Tare Weight-mg	Pan Count	Mean Length-mm	Notes
0	D	1	14	10	8		0			
0	D	2	5	10	10		0			
0	D	3	8	10	9		0			
1.875		1	13	10	10		0			
1.875		2	10	10	10		0			
1.875		3	11	10	10		0			
3.75		1	3	10	10		0			
3.75		2	9	10	10		0			
3.75		3	2	10	8		0			
7.5		1	17	10	8		0			
7.5		2	7	10	10		0			
7.5		3	16	10	10		0			
15		1	15	10	0		0			
15		2	18	10	0		0			
15		3	4	10	0		0			
30		1	8	10	0		0			
30		2	12	10	0		0			
30		3	1	10	0		0			

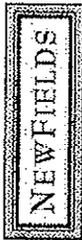


96-HOUR REFERENCE TOXICANT TEST WATER QUALITY DATASHEET

CLIENT	SAIC	PROJECT	Duwamish river	SPECIES	Neanthes arenaceodentata	NEWFIELDS LABORATORY	Port Gamble Bath 6	PROTOCOL	PSEP 1995
NEWFIELDS JOB NUMBER	0	PROJECT MANAGER	Tracy Schuh	QUANTITY OF STOCK	4.5 mL	QUANTITY OF DILUENT	1500 mL	INIT	CR
Test ID	P080418.38	LOT #	065107C	ACTUAL	4.50 mL	ACTUAL	1500.9 mL	DATE PREP	12/23/08
				TEST START DATE	23Dec08	TIME	3:30	TEST END DATE	27Dec08
									1230

WATER QUALITY DATA

DILTN.WAT.BATCH	TEMP REC#	REFERENCE TOX. MATERIAL				REFERENCE TOXICANT								
		cadmium chloride				cadmium								
0														
TEST CONDITIONS														
CLIENT/NEWFIELDS ID	CONCENTRATION	value	units	DAY	REP	D.O.		TEMP.		SALINITY		PH		WG TECH
						meter	mg/L	meter	°C	meter	ppt	meter	unit	
Ref.Tox.-cadmium	0	mg/L		0	Stock	3	6.9	3	19.4	3	28	3	7.7	DP
				1	Rep 1	3	6.4	3	19.6	3	28	3	7.8	J
				2	Rep 2	3	6.8	3	19.1	3	28	3	7.5	JS
				3	Rep 3	3	6.4	3	19.0	3	28	3	7.7	MPP
				4	Rep 1	3	6.3	3	19.1	3	28	3	8.4	JS
Ref.Tox.-cadmium	1.875	mg/L		0	Stock	3	7.1	3	19.4	3	28	3	7.7	DP
				1	Rep 1	3	6.2	3	19.7	3	28	3	7.9	J
				2	Rep 2	3	6.5	3	19.5	3	28	3	7.6	JS
				3	Rep 3	3	6.3	3	19.0	3	28	3	7.7	MPP
				4	Rep 1	3	6.2	3	19.1	3	28	3	8.3	JS
Ref.Tox.-cadmium	3.75	mg/L		0	Stock	3	7.1	3	19.3	3	28	3	7.7	DP
				1	Rep 1	3	6.4	3	19.7	3	28	3	7.9	J
				2	Rep 2	3	6.3	3	19.5	3	28	3	7.6	JS
				3	Rep 3	3	6.0	3	19.3	3	28	3	7.7	MPP
				4	Rep 1	3	6.3	3	19.0	3	28	3	8.2	JS



96-HOUR REFERENCE TOXICANT TEST WATER QUALITY DATASHEET

CLIENT	SAIC	PROJECT	Duwamish river	SPECIES	<i>Neanthes arenaceodentata</i>	NEWFIELDS LABORATORY	Port Gamble Bath 6	PROTOCOL	PSEP 1995
NEWFIELDS JOB NUMBER	0	PROJECT MANAGER	Tracy Schuh	QUANTITY OF STOCK	4.5 mL	QUANTITY OF DILUENT	1500mL	INIT	
Test ID		LOT #:		ACTUAL:		ACTUAL:		DATE PREP	
				TEST START DATE:	23Dec08	TIME		TIME	
						TEST END DATE	27Dec08		

WATER QUALITY DATA

DILTN.WAT.BATCH	TEMP REC#	REFERENCE TOX. MATERIAL		REFERENCE TOXICANT					
		cadmium chloride	cadmium	cadmium	cadmium				
0									
TEST CONDITIONS									
		DO (mg/L)	TEMP(C)	SAL (ppt)	pH	TECHNICIAN			
		5.0	20 ± 1	28 ± 1	8.00 ± 1				
Ref.Tox.-cadmium	0	Stock	3	19.5	3	28	3	7.7	DP
	1	Rep 1	3	19.7	3	28	3	7.9	J
	2	Rep 2	3	19.4	3	28	3	7.6	TS
	3	Rep 3	3	19.3	3	28	3	7.7	MP
	4	Rep 1	3	18.8	3	28	3	8.2	TE
Ref.Tox.-cadmium	0	Stock	3	19.4	3	28	3	7.7	DP
	1	Rep 1	3	19.7	3	28	3	7.9	J
	2	Rep 2	3	19.4	3	28	3	7.7	TS
	3	Rep 3	3	19.3	3	28	3	7.5	MP
	4	Rep 1	NA						
Ref.Tox.-cadmium	0	Stock	3	19.4	3	28	3	7.7	DP
	1	Rep 1	3	19.7	3	28	3	7.9	J
	2	Rep 2	3	19.5	3	28	3	7.7	TS
	3	Rep 3	NA						
	4	Rep 1	NA						



96-HOUR REFERENCE TOXICANT TEST OBSERVATION DATASHEET

SPECIES	<i>Neanthes arenaceodentata</i>
CLIENT	SAIC
PROJECT	Duwamish river
NEWFIELDS JOB #	0
PROJECT MANAGER	Tracy Schuh
NEWFIELDS LAB	Port Gamble 9ath 6
PROTOCOL	PSEP 1995

SURVIVAL & BEHAVIOR DATA

				DAY 1	DAY 2	DAY 3	DAY 4									
				DATE	DATE	DATE	DATE									
				12/24	12/25	12/26	12/27									
				TECHNICIAN	TECHNICIAN	TECHNICIAN	TECHNICIAN									
				J	TS	MFP	TS									
CLIENT/ NEWFIELDS ID	CONC.		REP	INITIAL # OF ORGANISMS	DAY 1			DAY 2			DAY 3			DAY 4		
	value	units			#ALIVE	#DEAD	OBS	#ALIVE	#DEAD	OBS	#ALIVE	#DEAD	OBS	#ALIVE	#DEAD	OBS
Ref. Tox. - cadmium	0	mg/L	1	[]	10	0	N	10	0	N	10	0	N	8	0	2NB
			2		10	0	N	10	0	N	10	0	N	10	0	N
			3		10	0	N	10	0	N	10	0	N	9	0	1NB
Ref. Tox. - cadmium	1.875	mg/L	1	[]	10	0	N	10	0	N	10	0	N	10	0	N
			2		10	0	N	10	0	N	10	0	N	10	0	N
			3		10	0	N	10	0	N	10	0	N	10	0	N
Ref. Tox. - cadmium	3.75	mg/L	1	[]	10	0	N	10	0	N	10	0	N	10	0	N
			2		10	0	N	10	0	N	10	0	N	10	0	N
			3		10	0	N	10	0	N	10	0	N	8	0	2NB
Ref. Tox. - cadmium	7.5	mg/L	1	[]	10	0	N	10	0	N	10	0	N	8	1	1NB
			2		10	0	N	10	0	N	10	0	N	10	0	N
			3		10	0	N	10	0	N	10	0	N	10	0	N
Ref. Tox. - cadmium	15	mg/L	1	[]	10	0	Q	10	0	Q	10	0	N	X		
			2		10	0	Q	10	0	Q	10	0	N			
			3		10	0	Q	10	0	Q	10	0	N			
Ref. Tox. - cadmium	30	mg/L	1	[]	10	0	Q	0	10	NA	X					
			2		10	0	Q	0	10	Q						
			3		10	0	Q	0	10	Q						

Incorrect entry MFP 12/26/08



ORGANISM RECEIPT LOG

Date: 12/16/08		Time: 1430		NewFields Batch No. DR0540	
Organism: Neanthes			Source: Dan Reish		
Address: On File				Invoice Attached Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Phone: On File			Contact: On File		
No. Ordered:		No. Received:		Source Batch: Culture	
Condition of Organisms: Good			Approximate Size or Age: 3 - 5 mm		
Shipper: FedEx			B of L (Tracking No.) 8682 4360 0540		
Condition of Container: Good			Received By: MMB		
Confirmation of ID of Organism: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>				Technician (Initials): MMB	
Notes:					
pH (Units)		Temp. (°C)	D.O. (mg/L)	Conductivity or Salinity (Include Units)	Technician (Initials)
7.3		14.4	6.9	35 ppt	MMB
Notes:					

Appendix D
Water-Column Toxicity Tests
Data Sheets and Supporting Information



96 HOUR SUSPENDED PARTICULATE
PHASE TEST
WATER QUALITY DATASHEET

CLIENT	PROJECT	SPECIES	DILUTION WATER BATCH	TEST START DATE	TIME
City of Newport	Marina Park	Menidia beryllina	FSW010609	07Jan09	1600
NEWFIELDS JOB NUMBER	PROJECT MANAGER	NEWFIELDS LABORATORY	PROTOCOL	TEST END DATE	TIME
1105-005-860	Bill Gardiner	Port Gamble Bath	USEPA/USCOE 1998 / NEWFIELDS B10067	11Jan09	1700

WATER QUALITY DATA

CLIENT/NEWFIELDS ID	CONCENTRATION		DAY	REP	DO (mg/L)		TEMP (C)		SALINITY (ppt)		PH		Date	Tech	FEEDINGS
	value	units			D.O.	meter	TEMP.	meter	SALINITY	meter	PH	unit			
Control / .	0%		0	All	4	3.8	4	19.8	1	32	1	8.0	1/9/09	CR	
Control / .	0%		1	1	4	7.1	4	19.5	1	32	1	7.5	1/8	MWB	
Control / .	0%		2	2	4	7.0	4	18.6	1	32	1	7.6	1/9	TS	BH
Control / .	0%		3	3	4	7.1	4	18.8	1	33	1	7.6	1/10	CR	
Control / .	0%		3	1	3	7.9	3	19.0	3	34	3	7.4	1/11	CR	
Control / .	0%		3	2	3	7.8	3	19.3	3	33	3	7.4			
Control / .	0%		3	3	3	6.5	3	19.2	3	33	3	7.6			
Control / .	0%		4	4	3	6.8	3	19.2	3	33	3	7.7			
Control / .	0%		4	5	3	7.8	3	19.2	3	33	3	7.7			
Site Water / .	0%		0	All	4	9.0	4	19.8	1	34	1	7.9	1/9/09	CR	
Site Water / .	0%		1	1	4	7.2	4	19.8	1	35	1	7.8	1/8	MWB	
Site Water / .	0%		2	2	4	7.1	4	19.1	1	35	1	7.8	1/9	TS	BH
Site Water / .	0%		3	3	4	7.1	4	19.3	1	35	1	7.6	1/10	CR	
Site Water / .	0%		3	1	3	7.9	3	19.3	3	35	3	7.8	1/11	CR	
Site Water / .	0%		3	2	3	7.8	3	19.3	3	36	3	7.8			
Site Water / .	0%		3	3	3	7.1	3	19.4	3	36	3	7.9			
Site Water / .	0%		3	4	3	6.9	3	19.4	3	35	3	7.9			
Site Water / .	0%		4	4	3	6.9	3	19.4	3	35	3	7.9			
Site Water / .	0%		4	5	3	6.8	3	19.3	3	35	3	7.9			

1/17/2009 Menidia SPP Test W/Q
 ① WC CR 1/10/09
 ② WV CR 1/11/09

NEWFIELDS

96 HOUR SUSPENDED PARTICULATE PHASE TEST WATER QUALITY DATASHEET

CLIENT City of Newport	PROJECT Marina Park	SPECIES Meridia beryllina	DILUTION WATER BATCH FSW010609
NEWFIELDS JOB NUMBER 1105-005-860	PROJECT MANAGER Bill Gardiner	NEWFIELDS LABORATORY Port Gamble Bath	PROTOCOL USEPAUSCOE 1998 / NEWFIELDS B10067
			TEST START DATE .07Jan09
			TEST END DATE 11Jan09
			TIME 1600

WATER QUALITY DATA

CLIENT/NEWFIELDS ID	CONCENTRATION		DAY	REP	DO (mg/L)		TEMP (C)		SALINITY (ppt)		pH		Date	Tech	FEEDINGS
	value	units			meter	D.O.	meter	TEMP.	meter	SALINITY	meter	pH			
Comp C-U/.	10%		0	All	4	7.8	4	19.9	1	32	1	7.9	1/3/09	✓	
	10%		1	1	4	7.3	4	19.9	1	32	1	8.0	1/8	NMB	
	10%		2	2	4	7.1	4	18.8	1	32	1	7.8	1/9	JS	BH
	10%		3	3	4	7.2	4	19.4	1	33	1	7.7	1/10	CR	
	10%		3	3	4	7.1	3	19.3	3	34	3	7.9	1/11	CR	
Comp C-U/.	10%		1	1	3	7.0	1	19.2	1	35	1	7.9			
	10%		2	2	1	7.1	1	19.2	1	32	1	7.9			
	10%		3	3	1	7.1	1	19.2	1	34	1	7.9			
	10%		4	4	1	8.0	1	19.2	1	36	1	7.9			
	10%		5	5	1	6.8	1	19.2	1	36	1	7.9			
Comp C-U/.	50%		0	All	4	7.4	4	19.9	1	33	1	8.0	1/3/09	✓	
	50%		1	1	4	7.1	4	19.9	1	33	1	7.9	1/8	NMB	
	50%		2	2	4	7.7	4	19.0	1	33	1	7.9	1/9	JS	BH
	50%		3	3	4	7.3	4	19.3	1	33	1	7.7	1/10	CR	
	50%		3	3	4	7.3	4	19.3	1	33	1	7.7	1/11	CR	
Comp C-U/.	50%		1	1	3	6.6	3	19.4	3	34	3	8.0			
	50%		2	2	1	7.3	1	19.4	1	35	1	7.9			
	50%		3	3	1	7.1	1	19.3	1	35	1	8.0			
	50%		4	4	1	7.4	1	19.5	1	34	1	8.0			
	50%		5	5	1	6.8	1	19.4	1	35	1	7.9			
Comp C-U/.	100%		0	All	4	6.6	4	19.9	1	34	1	8.2	1/3/09	✓	
	100%		1	1	4	6.5	4	19.8	1	35	1	7.9	1/8	NMB	
	100%		2	2	4	7.1	4	19.3	1	34	1	8.0	1/9	JS	BH
	100%		3	3	4	7.3	4	19.4	1	35	1	7.7	1/10	CR	
	100%		3	3	3	7.1	3	19.4	3	35	3	8.0	1/11	CR	
Comp C-U/.	100%		4	4	1	7.0	1	19.4	1	36	1	7.8			
	100%		3	3	1	7.4	1	19.4	1	36	1	7.9			
	100%		4	4	1	7.4	1	19.4	1	36	1	7.9			
	100%		5	5	1	6.6	1	19.5	1	36	1	8.0			
	100%		4	4	1	7.4	1	19.4	1	36	1	7.9			

NEWFIELDS

96 HOUR SUSPENDED PARTICULATE PHASE TEST WATER QUALITY DATASHEET

CLIENT City of Newport	PROJECT Marina Park	SPECIES Menidia beryllina	DILUTION WATER BATCH FSW010609
NEWFIELDS JOB NUMBER 1105-005-860	PROJECT MANAGER Bill Gardiner	NEWFIELDS LABORATORY Port Gamble Bath	PROTOCOL USEPAUSCOE 1998 / NEWFIELDS BIOD67
		TEST START DATE 07Jan09	TEST END DATE 11Jan09
		TIME 1600	

WATER QUALITY DATA

CLIENT/NEWFIELDS ID	CONCENTRATION value units	DAY	REP	DO (mg/L)		TEMP (C)		SALINITY (ppt)		pH		Date	Tech	FEEDING
				meter	D.O.	meter	TEMP.	meter	SALINITY	meter	pH			
					mg/L		°C		ppt		unit			
Comp C-L/.	10 %	0	All	4	8.2	4	19.9	1	32	1	7.9	1/2/09	MMB	
Comp C-L/.	10 %	1	1	4	7.0	4	19.9	1	32	1	7.9	1/8	MMB	
Comp C-L/.	10 %	2	2	4	7.2	4	18.7	1	32	1	7.8	1/9	TS	BH
Comp C-L/.	10 %	3	3	4	7.3	4	19.1	1	32	1	7.7	1/10	CR	
			1	3	6.10	3	19.5	3	34	3	7.9	1/11	CR	
			2	1	6.8	1	19.4	1	33	1	7.9			
			3	1	7.0	1	19.2	1	34	1	7.9			
			4	1	6.7	1	19.4	1	33	1	7.8			
			5	1	6.7	1	19.4	1	33	1	7.8			
Comp C-L/.	50 %	0	All	4	8.0	4	19.9	1	33	1	7.8	1/2/09	MMB	
Comp C-L/.	50 %	1	1	4	7.1	4	19.8	1	33	1	7.9	1/8	MMB	
Comp C-L/.	50 %	2	2	4	7.5	4	18.7	1	33	1	7.7	1/9	TS	BH
Comp C-L/.	50 %	3	3	4	7.3	4	19.3	1	34	1	7.7	1/10	CR	
			1	3	7.7	3	19.4	3	36	3	7.9	1/11	DP	
			2	1	7.0	1	19.5	1	35	1	7.9			
			3	1	6.9	1	19.5	1	35	1	8.0			
			4	1	6.6	1	19.4	1	36	1	7.8			
			5	1	7.1	1	19.2	1	36	1	7.8			
Comp C-L/.	100 %	0	All	4	8.0	4	19.9	1	34	1	7.8	1/2/09	MMB	
Comp C-L/.	100 %	1	1	4	6.9	4	19.8	1	34	1	7.9	1/8	MMB	
Comp C-L/.	100 %	2	2	4	7.0	4	19.2	1	34	1	7.9	1/9	TS	BH
Comp C-L/.	100 %	3	3	4	7.4	4	19.4	1	35	1	7.8	1/10	CR	
			1	3	7.3	3	19.4	3	34	3	7.9	1/11	CR	
			2	1	7.4	1	19.2	1	35	1	7.9			
			3	1	7.4	1	19.4	1	35	1	7.9			
Comp C-L/.	100 %	4	4	4	7.1	4	19.5	1	35	1	8.0			
			5	4	7.2	4	19.5	1	35	1	8.0			
Comp C-L/.	100 %	4	4	5	7.2	5	19.5	1	35	1	7.9			



Ammonia Analysis Total Ammonia (mg/L)

Client/Project: <i>City of Newport / Marina Park</i>	Organism: <i>Menidia</i>	NewFields Test ID:	Test Duration (days): <i>4</i>
--	------------------------------------	---------------------------	--

PRETEST / INITIAL / FINAL / OTHER (circle one) DAY of TEST: Ø
 OVERLYING (OV) / POREWATER (PW) (circle one)

Calibration Standards Temperature		Sample temperature should be within $\pm 1^{\circ}\text{C}$ of standards temperature at time and date of analysis.
Date:	Temperature:	
<i>1/7/09</i>	<i>19</i>	

Sample ID or Description	Conc. or Rep	Date of Sampling and Initials	Ammonia Value (mg/L)	Temp °C	Date of Reading and Initials	Sample Preserved (Y/N)	pH	Sal (ppt)	Sulf. mg/L
<i>Control</i>		<i>1/7/09 ✓</i>	<i>0.0767</i>	<i>19</i>	<i>1/7/09 ✓</i>	<i>N</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
<i>Site Water</i>			<i>0.00</i>						
<i>C-L</i>	<i>10</i>		<i>0.00</i>						
<i>C-L</i>	<i>50</i>		<i>0.00</i>						
<i>C-L</i>	<i>100</i>		<i>0.00</i>						
<i>C-U</i>	<i>100</i>		<i>0.00</i>						
<i>E-U</i>	<i>50</i>		<i>0.00</i>						
<i>C-U</i>	<i>10</i>		<i>0.00</i>						

96 HOUR SUSPENDED PARTICULATE PHASE TEST DATA SHEET 3



SPECIES
Mentidia beryllina

CLIENT City of Newport PROJECT Marina Park NEWFIELDS JOB NO. 1105-005-860 PROJECT MANAGER Bill Gardiner

SURVIVAL & BEHAVIOR DATA

OBSERVATIONS KEY N = normal Q = loss of equilibrium J = jumper SB = surfacing NB = no body	DC = discoloration OB = on bottom J = jumper NB = no body	Day 1			Day 2			Day 3			Day 4													
		DATE	TECHNICIAN	OBS	DATE	TECHNICIAN	OBS	DATE	TECHNICIAN	OBS	DATE	TECHNICIAN	OBS											
CLIENT NEWFIELDS ID	CONC. VALUE UNITS	REP. NUMBER	INITIAL	DATE	TECHNICIAN	#ALIVE	#DEAD	OBS	DATE	TECHNICIAN	#ALIVE	#DEAD	OBS	DATE	TECHNICIAN	#ALIVE	#DEAD	OBS						
Control / .	0%	1	10	10	0	0	N	10	0	0	0	0	N	10	0	0	0	N	10	0	0	0	N	
		2	10	0	0	10	0	0	10	0	0	0	0	10	0	0	0	0	10	0	0	0	0	0
		3	10	0	0	10	0	0	10	0	0	0	0	10	0	0	0	0	10	0	0	0	0	0
		4	10	0	0	10	0	0	10	0	0	0	0	10	0	0	0	0	10	0	0	0	0	0
		5	10	0	0	10	0	0	10	0	0	0	0	10	0	0	0	0	10	0	0	0	0	0
Site Water /	0%	1	10	0	0	10	0	0	10	0	0	0	0	10	0	0	0	0	10	0	0	0	0	0
		2	10	0	0	10	0	0	10	0	0	0	0	10	0	0	0	0	10	0	0	0	0	0
		3	10	0	0	10	0	0	10	0	0	0	0	10	0	0	0	0	10	0	0	0	0	0
		4	10	0	0	10	0	0	10	0	0	0	0	10	0	0	0	0	10	0	0	0	0	0
		5	10	0	0	10	0	0	10	0	0	0	0	10	0	0	0	0	10	0	0	0	0	0
Comp C-U / .	10%	1	10	0	0	10	0	0	10	0	0	0	0	10	0	0	0	0	10	0	0	0	0	0
		2	10	0	0	10	0	0	10	0	0	0	0	10	0	0	0	0	10	0	0	0	0	0
		3	10	0	0	10	0	0	10	0	0	0	0	10	0	0	0	0	10	0	0	0	0	0
		4	10	0	0	10	0	0	10	0	0	0	0	10	0	0	0	0	10	0	0	0	0	0
		5	10	0	0	10	0	0	10	0	0	0	0	10	0	0	0	0	10	0	0	0	0	0
Comp C-U / .	50%	1	10	0	0	10	0	0	10	0	0	0	0	10	0	0	0	0	10	0	0	0	0	0
		2	10	0	0	10	0	0	10	0	0	0	0	10	0	0	0	0	10	0	0	0	0	0
		3	10	0	0	10	0	0	10	0	0	0	0	10	0	0	0	0	10	0	0	0	0	0
		4	10	0	0	10	0	0	10	0	0	0	0	10	0	0	0	0	10	0	0	0	0	0
		5	10	0	0	10	0	0	10	0	0	0	0	10	0	0	0	0	10	0	0	0	0	0
Comp C-U / .	100%	1	10	0	0	10	0	0	10	0	0	0	0	10	0	0	0	0	10	0	0	0	0	0
		2	10	0	0	10	0	0	10	0	0	0	0	10	0	0	0	0	10	0	0	0	0	0
		3	10	0	0	10	0	0	10	0	0	0	0	10	0	0	0	0	10	0	0	0	0	0
		4	10	0	0	10	0	0	10	0	0	0	0	10	0	0	0	0	10	0	0	0	0	0
		5	10	0	0	10	0	0	10	0	0	0	0	10	0	0	0	0	10	0	0	0	0	0

NEWFIELDS

SPECIES
Mentidia beryllina

96 HOUR SUSPENDED PARTICULATE PHASE TEST DATA SHEET 3

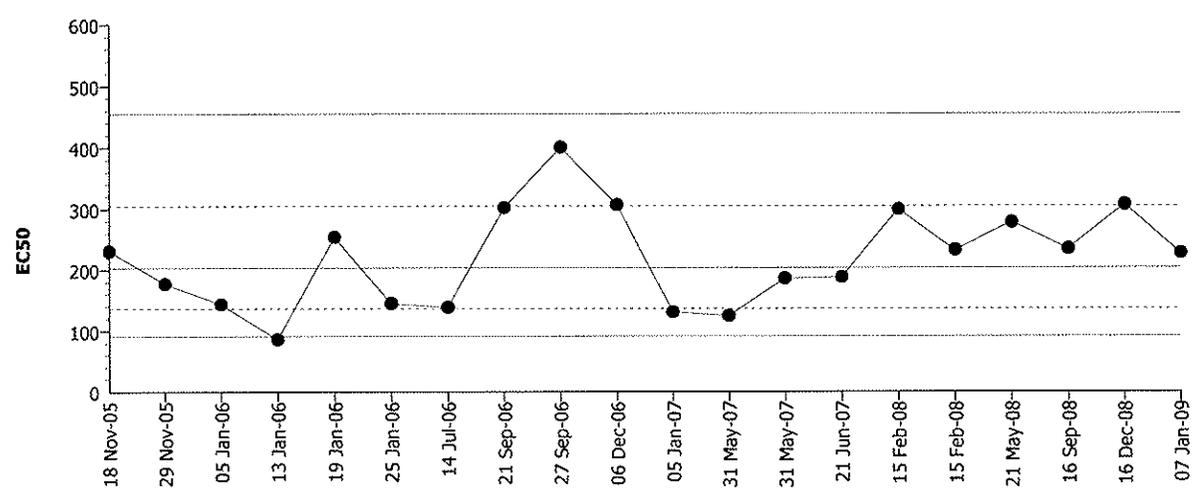
CLIENT City of Newport	PROJECT Marina Park	NEWFIELDS JOB NO. 1105-005-860
		PROJECT MANAGER Bill Gardiner

SURVIVAL & BEHAVIOR DATA

OBSERVATIONS KEY N = normal LOB = loss of equilibrium Q = quiescent SUP = surfacing	DC = discoloration OB = on bottom J = jumper NB = no body	Day 1			Day 2			Day 3			Day 4							
		DATE	TECHNICIAN	#ALIVE #DEAD	OBS	DATE	TECHNICIAN	#ALIVE #DEAD	OBS	DATE	TECHNICIAN	#ALIVE #DEAD	OBS					
		1/8/09	BM			1/9	TS			1/10	WR			1/11	CR			
Comp C-L / . 10%		REP	INITIAL															
		1	10	0	0	N	10	0	0	N	9	0	0	N	9	0	N	
		2	10	0	0	N	10	0	0	N	9	0	0	N	9	0	N	
		3	10	0	0	N	10	0	0	N	10	0	0	N	10	0	N	
		4	10	0	0	N	10	0	0	N	10	0	0	N	10	0	N	
Comp C-L / . 50%		1	10	0	0	NB	9	0	0	NB	9	0	0	N	9	0	0	N
		2	10	0	0	N	10	0	0	N	10	0	0	N	10	0	0	N
		3	10	0	0	N	10	0	0	N	10	0	0	N	10	0	0	N
		4	10	0	0	N	10	0	0	N	10	0	0	N	10	0	0	N
		5	10	0	0	N	10	0	0	N	10	0	0	N	10	0	0	N
Comp C-L / . 100%		1	10	0	0	N	10	0	0	N	10	0	0	N	10	0	0	N
		2	10	0	0	N	10	0	0	N	10	0	0	N	10	0	0	N
		3	10	0	0	N	10	0	0	N	10	0	0	N	10	0	0	N
		4	10	0	0	N	10	0	0	N	10	0	0	N	10	0	0	N
		5	10	0	0	N	10	0	0	N	10	0	0	N	10	0	0	N

Reference Toxicant 96-h Acute Survival Test NewFields

Test Type: Survival Organism: Menidia beryllina (Inland Silverside) Material: Copper sulfate
 Protocol: EPA/821/R-02-012 (2002) Endpoint: Proportion Survived Source: Reference Toxicant-REF



Mean: 203.791 Count: 19 -1s Warning Limit: 136.481 -2s Action Limit: 91.403
 Sigma: CV: 49.32% +1s Warning Limit: 304.296 +2s Action Limit: 454.368

Quality Control Data										
Point	Year	Month	Day	Data	Delta	Sigma	Warning	Action	Test Link	Analysis
1	2005	Nov	18	231.0145	27.22398	0.31276			00-5400-7163	12-4250-6835
2			29	177.3950	-26.3955	-0.34600			09-7179-4794	11-4481-7307
3	2006	Jan	5	143.6334	-60.1571	-0.87259			11-9868-2213	07-1919-5333
4			13	86.05408	-117.736	-2.15041	(-)	(-)	06-6412-0123	07-5635-3913
5			19	253.8606	50.07008	0.54799			14-3550-5235	08-7655-3856
6			25	145.0174	-58.7731	-0.84867			09-8902-4433	10-2133-1793
7		Jul	14	138.7884	-65.0022	-0.95818			12-3489-2800	05-4639-7387
8		Sep	21	301.4977	97.70718	0.97696			13-2437-4560	13-4184-0272
9			27	400.0000	196.2094	1.68211	(+)		06-7939-8708	18-0414-2219
10		Dec	6	306.3108	102.5202	1.01646	(+)		13-1351-8433	14-1844-9693
11	2007	Jan	5	130.3407	-73.4498	-1.11482	(-)		10-8312-3501	05-6092-7194
12		May	31	124.1810	-79.6095	-1.23558	(-)		07-3393-4206	09-0298-1066
13			31	185.8127	-17.9778	-0.23036			15-1085-6486	07-8998-8487
14		Jun	21	187.8662	-15.9244	-0.20295			11-4444-5191	09-2989-1578
15	2008	Feb	15	298.8723	95.08178	0.95514			09-0873-1841	02-2843-3056
16			15	232.3128	28.52228	0.32674			02-3273-3535	02-4532-0088
17		May	21	277.7252	73.93468	0.77210			09-4275-9770	06-5552-2016
18		Sep	16	234.4507	30.66018	0.34959			15-9104-3417	05-6930-9029
19		Dec	16	306.7106	102.9200	1.01972	(+)		14-9978-8744	16-1416-6951
20	2009	Jan	7	227.3526	23.56208	0.27290			07-0376-1286	14-5735-1267

CETIS Analysis Detail

Reference Toxicant 96-h Acute Survival Test						NewFields
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Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Proportion Survived	Comparison	07-0376-1286	07-0376-1286	26 Jan-09 2:46 PM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Dunnett's Multiple Comparison	C > T	Angular (Corrected)		100	200	1	141.421	21.14%

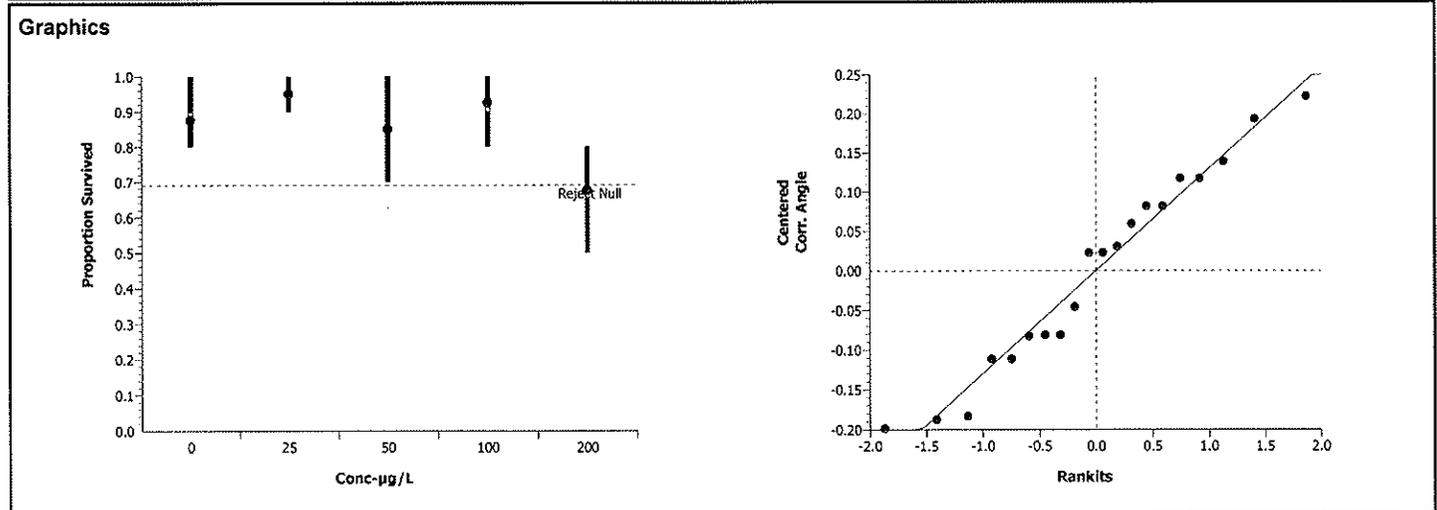
Group Comparisons							
Control	vs	Conc-µg/L	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Water		25	-1.1032	2.35615	0.9808	0.23853	Non-Significant Effect
		50	0.28643	2.35615	0.6951	0.23853	Non-Significant Effect
		100	-0.7528	2.35615	0.9549	0.23853	Non-Significant Effect
		200	2.47063	2.35615	0.0405	0.23853	Significant Effect

ANOVA Table						
Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.3200928	0.0800232	4	3.90	0.02289	Significant Effect
Error	0.3074808	0.0204987	15			
Total	0.62757352	0.1005219	19			

ANOVA Assumptions					
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Bartlett	1.10293	13.27670	0.89381	Equal Variances
Distribution	Shapiro-Wilk W	0.95540		0.45657	Normal Distribution

Data Summary		Original Data					Transformed Data			
Conc-µg/L	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	4	0.87500	0.80000	1.00000	0.09574	1.21884	1.10715	1.41202	0.14512
25		4	0.95000	0.90000	1.00000	0.05773	1.33053	1.24905	1.41202	0.09409
50		4	0.85000	0.70000	1.00000	0.12910	1.18984	0.99116	1.41202	0.18182
100		4	0.92500	0.80000	1.00000	0.09574	1.29506	1.10715	1.41202	0.14695
200		4	0.67500	0.50000	0.80000	0.12583	0.96872	0.78540	1.10715	0.13389

Data Detail											
Conc-µg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	0.80000	0.80000	0.90000	1.00000						
25		0.90000	1.00000	0.90000	1.00000						
50		0.70000	0.90000	0.80000	1.00000						
100		0.80000	0.90000	1.00000	1.00000						
200		0.70000	0.80000	0.70000	0.50000						



CETIS Analysis Detail

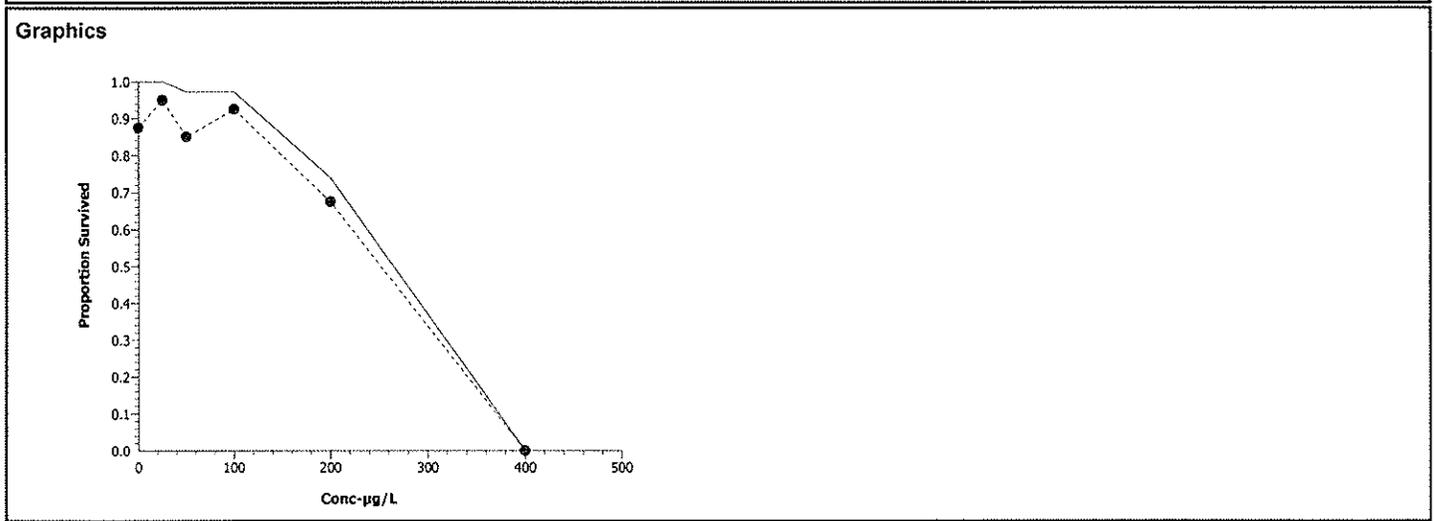
Spearman-Karber: Page 1 of 1
 Report Date: 26 Jan-09 2:46 PM
 Analysis: 14-5735-1267

Reference Toxicant 96-h Acute Survival Test NewFields

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Proportion Survived	Trimmed Spearman-Karber	07-0376-1286	07-0376-1286	26 Jan-09 2:46 PM	CETISv1.1.2

Spearman-Karber Options					Point Estimates		
Threshold Option	Lower Threshold	Trim	Mu	Sigma	EC50/LC50	95% LCL	95% UCL
Control Threshold	0.125	0.00%	2.3567	0.02359894	227.35260	203.93980	253.45320

Data Summary		Calculated Variate(A/B)							
Conc-µg/L	Control Type	Count	Mean	Minimum	Maximum	SE	SD	A	B
0	Dilution Water	4	0.87500	0.80000	1.00000	0.01954	0.09574	35	40
25		4	0.95000	0.90000	1.00000	0.01179	0.05773	38	40
50		4	0.85000	0.70000	1.00000	0.02635	0.12910	34	40
100		4	0.92500	0.80000	1.00000	0.01954	0.09574	37	40
200		4	0.67500	0.50000	0.80000	0.02569	0.12583	27	40
400		4	0.00000	0.00000	0.00000	0.00000	0.00000	0	40



CETIS Data Worksheet

Reference Toxicant 96-h Acute Survival Test

NewFields

Start Date: 07 Jan-09 04:30 PM **Species:** Menidia beryllina **Sample Code:** 1329533958
Ending Date: 11 Jan-09 05:00 PM **Protocol:** EPA/821/R-02-012 (2002) **Sample Source:** Reference Toxicant
Sample Date: 07 Jan-09 04:30 PM **Material:** Copper sulfate **Sample Station:** P070930.99

Conc-µg/L	Code	Rep	Pos	# Exposed	# Survived	Notes
0	D	1	12	10	8	
0	D	2	11	10	8	
0	D	3	7	10	9	
0	D	4	23	10	10	
25		1	20	10	9	
25		2	2	10	10	
25		3	1	10	9	
25		4	17	10	10	
50		1	21	10	7	
50		2	14	10	9	
50		3	8	10	8	
50		4	19	10	10	
100		1	18	10	8	
100		2	24	10	9	
100		3	16	10	10	
100		4	6	10	10	
200		1	13	10	7	
200		2	15	10	8	
200		3	22	10	7	
200		4	9	10	5	
400		1	4	10	0	
400		2	5	10	0	
400		3	10	10	0	
400		4	3	10	0	

**REFERENCE TOXICANT TEST
SURVIVAL DATASHEET**



SPECIES <i>Menidia beryllina</i>
NEWFIELDS LABORATORY Port Gamble Bath
PROTOCOL USEPA/USCOE 1998

CLIENT City of Newport	PROJECT Marina Park	NEWFIELDS JOB NO. ---	PROJECT MANAGER Bill Gardiner
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SURVIVAL & BEHAVIOR DATA

OBSERVATION KEY
 N = normal
 LOE= loss of equilibrium
 Q = quiescent
 DC = discoloration
 NB = no body
 F= Floating on Surface

INITIAL # OF ORGANISMS
10

DAY 1	DAY 2	DAY 3	DAY 4
DATE 1/8/09	DATE 1/9/09	DATE 1/10/09	DATE 1/11/09
TECHNICIAN BH	TECHNICIAN BH	TECHNICIAN CR	TECHNICIAN CR

CLIENT/ NEWFIELDS ID	CONC.		REP	INITIAL NUMBER	DAY 1			DAY 2			DAY 3			DAY 4		
	value	units			#ALIVE	#DEAD	OBS									
Ref.Tox.- copper	0 mg/l		1	10	10	0	N	10	0	N	10	0	N	8	2	N
			2	1	10	0	N	10	0	N	9	1	N	8	1	N
			3	1	10	0	N	10	0	N	9	1	N	9	0	N
			4	1	10	0	N									
			5	1												
Ref.Tox.- copper	25 mg/l		1	1	10	0	N	10	0	N	9	1	N	9	0	N
			2	1	10	0	N									
			3	1	9	1	N	9	0	N	9	0	N	9	0	N
			4	1	10	0	N									
			5	1												
Ref.Tox.- copper	50 mg/l		1	1	8	2	N	8	0	N	8	0	N	7	1	N
			2	1	10	0	N	10	0	N	9	1	N	9	0	N
			3	1	10	0	N	10	0	N	10	0	N	8	2	N
			4	1	10	0	N									
			5	1												
Ref.Tox.- copper	100 mg/l		1	1	9	1	N	8	1	N	8	0	N	8	0	N
			2	1	9	1	N	9	0	N	9	0	N	9	0	N
			3	1	10	0	N									
			4	1	10	0	N									
			5	1												
Ref.Tox.- copper	200 mg/l		1	1	8	2	N	8	0	N	8	0	N	7	1	N
			2	1	8	2	N	8	0	N	8	0	N	8	0	N
			3	1	8	2	N	8	0	N	7	1	N	7	0	N
			4	1	7	3	N	7	0	N	7	0	N	5	2	N
			5	1												
Ref.Tox.- copper	400 mg/l		1	1	0	10	-									
			2	1	1	9	N	0	1							
			3	1	4	6	R	0	4							
			4	1	1	9	N	0	1							
			5	1												

NEWFIELDS

Reference Toxicant Test Water Quality Datasheet

P070930.99

CLIENT	PROJECT	SPECIES	PROTOCOL	TEST START DATE	TIME
City of Newport	Marina Park	<i>Menidia beryllina</i>	Port Gamble / Bath	07Jan09	1630
NEWFIELDS JOB NUMBER	PROJECT MANAGER	QUANTITY OF STOCK TARGET	QUANTITY OF DILUENT TARGET	TEST END DATE	TIME
1105-005-860	Bill Gairdner	1,572 mL	2000 mL	11Jan09	1700
NEWFIELDS LABORATORY	DILUTION WATER BATCH	QUANTITY OF STOCK ACTUAL	QUANTITY OF DILUENT ACTUAL	INITIAL/LAND DATE	PROTOCOL
Port Gamble Bath	FSW010609	1,57254 mL	2000.0g	TS 1/4/09	USEPAUSCOE 1998 / NEWFIELDS B10067

WATER QUALITY DATA

CLIENT/ NEWFIELDS ID	CONCENTRATION value	units	DAY	REP	DO (mg/L)		TEMP (°C)		SALINITY (ppt)		pH		Date	Tech	FEEDING
					> 3.7	D.O.	20 ± 2	TEMP. °C	31 ± 2	SALINITY	7.8 ± 0.5	pH			
Ref.Tox.-copper	0 mg/L		0	All	4	7.9	4	18.0	1	32	1	7.3	3/17/09	TS	MMB
			1	1	4	6.9	4	19.5	1	32	1	7.5	1/8	MMB	MMB
			2	2	4	7.6	4	18.9	1	32	1	7.5	1/9	BH	MMB
			3	3	4	6.7	4	19.0	1	32	1	7.6	1/10	CR	MMB
			4	4	3	6.5	3	19.5	3	33	3	7.8	1/11	CR	MMB
			0	All	4	8.0	4	18.0	1	32	1	7.8	1/7/09	TS	MMB
			1	1	4	7.0	4	19.8	1	32	1	7.8	1/8	MMB	MMB
			2	2	4	7.0	4	19.4	1	32	1	7.7	1/9	BH	MMB
			3	3	4	6.8	4	19.1	1	32	1	7.7	1/10	CR	MMB
			4	4	3	6.5	3	19.7	3	33	3	7.9	1/11	CR	MMB
			0	All	4	8.0	4	18.0	1	32	1	7.8	1/7/09	TS	MMB
			1	1	4	7.0	4	19.9	1	32	1	7.8	1/8	MMB	MMB
2	2	4	7.1	4	19.6	1	32	1	7.8	1/9	BH	MMB			
3	3	4	6.9	4	19.1	1	32	1	7.7	1/10	CR	MMB			
4	4	3	8.2	3	19.7	3	33	3	7.9	1/11	CR	MMB			
Ref.Tox.-copper	50 mg/L		2	2	4	7.1	4	19.6	1	32	1	7.8	1/9	BH	MMB
			3	3	4	6.9	4	19.1	1	32	1	7.7	1/10	CR	MMB
			4	4	3	8.2	3	19.7	3	33	3	7.9	1/11	CR	MMB
			0	All	4	8.0	4	18.0	1	32	1	7.8	1/7/09	TS	MMB

NEWFIELDS

Reference Toxicant Test Water Quality Datasheet

CLIENT	PROJECT	SPECIES	PROTOCOL	TEST START DATE	TIME
City of Newport	Marina Park	Menidia beryllina	Port Gamble / Bath	07 Jan 09	1630
NEWFIELDS JOB NUMBER 1105-005-860	PROJECT MANAGER Bill Gardiner	QUANTITY OF STOCK TARGET 1.572 mL	QUANTITY OF DILUENT TARGET 2000 mL	TEST END DATE 11 Jan 09	TIME
NEWFIELDS LABORATORY Port Gamble Bath	DILUTION WATER BATCH FSW010609	QUANTITY OF STOCK ACTUAL 1.57254 mL	QUANTITY OF DILUENT ACTUAL 2000.0 mL	INITIALLAND DATE TS 1/9/09	PROTOCOL USEPAUSCOE 1998 / NEWFIELDS B10067

CLIENT/NEWFIELDS ID	CONCENTRATION value units	DAY	REP	DO (mg/L)		TEMP (°C)		SALINITY (ppt)		pH		Date	Tech	FEEDING	
				meter	mg/L	meter	°C	meter	ppt	meter	unit			AM	PM
				> 3.7		20 ± 2		31 ± 2		7.8 ± 0.5					
Ref. Tox.-copper 100 mg/L		0	All	4	8.1	4	18.0	1	32	1	7.8	1/7/09	TS	MMWB	MMWB
		1	1	4	7.2	4	20.0	1	32	1	7.9	1/8	MMWB	MMWB	MMWB
		2	2	4	6.8	4	19.7	1	32	1	7.8	1/9	BH	MMWB	MMWB
		3	3	4	6.6	4	19.1	1	32	1	7.8	1/10	CR	MMWB	MMWB
Ref. Tox.-copper 200 mg/L		4	4	3	6.8	3	19.0	3	33	3	7.9	1/11	CR	MMWB	MMWB
		0	All	4	8.1	4	18.0	1	32	1	7.8	1/7/09	TS	MMWB	MMWB
		1	1	4	7.1	4	20.0	1	32	1	7.9	1/8	MMWB	MMWB	MMWB
		2	2	4	7.0	4	19.7	1	32	1	7.8	1/9	BH	MMWB	MMWB
Ref. Tox.-copper 400 mg/L		3	3	4	6.7	4	19.1	1	32	1	7.8	1/10	CR	MMWB	MMWB
		4	4	3	7.0	3	19.6	3	33	3	7.9	1/11	CR	MMWB	MMWB
		0	All	4	8.1	4	18.0	1	32	1	7.8	1/7/09	TS	MMWB	MMWB
		1	1	4	7.2	4	20.0	1	32	1	7.9	1/8	MMWB	MMWB	MMWB
Ref. Tox.-copper		2	2	4	7.3	4	19.7	1	32	1	7.9	1/9	BH	MMWB	MMWB
		3	3												
		4	4												



ORGANISM RECEIPT LOG

Date: 1/6/09		Time: 1430		NewFields Batch No. ABS 1546 mb	
Organism: Meridia Berylling			Source: Aquatic BioSystems		
Address: On File				Invoice Attached <input checked="" type="radio"/> Yes <input type="radio"/> No	
Phone: On File		Contact: Scott Kellman			
No. Ordered: 775		No. Received: 850		Source Batch: 12/27/08 hatch	
Condition of Organisms: 14 dead / 10 dead OK			Approximate Size or Age: 10 day old		
Shipper: FedEx			B of L (Tracking No.): 6732 0732 1546		
Condition of Container: Good			Received By: BH		
Confirmation of ID of Organism: Yes <input type="radio"/> No <input checked="" type="radio"/>				Technician (Initials): BH	
Notes:					
pH (Units)	Temp. (°C)	D.O. (mg/L)	Conductivity or Salinity (Include Units)	Technician (Initials)	
7.2/7.2	18.6/18.7	11.9/13.0	29/29	BH	
Notes:					

NEWFIELDS

96 HOUR SUSPENDED PARTICULATE PHASE TEST WATER QUALITY DATASHEET

CLIENT City of Newport	PROJECT Marina Park	SPECIES <i>Mysidopsis bahia</i>	DILUTION WATER BATCH FSW010609
NEWFIELDS JOB NUMBER 1105-005-860	PROJECT MANAGER Bill Gardiner	NEWFIELDS LABORATORY Port Gamble Bath	PROTOCOL USEPAUSCOE 1998 / NEWFIELDS B10067
		TEST START DATE 07Jan09	TEST END DATE 11Jan09
		TIME 1645	TIME 1800

WATER QUALITY DATA

CLIENT/NEWFIELDS ID	CONCENTRATION value units	DAY	REP	DO (mg/L)		TEMP (C)		SALINITY (ppt)		pH		Date	Tech	FEEDING
				> 3.7	D.O.	20 ± 2	TEMP.	31 ± 2	SALINITY	7.8 ± 0.5	pH			
Control /	0 %	0	All	4	7.9	4	18.8	1	32	1	7.7	1/2/09	✓	Apr 1 PM
Control /	0 %	1	1	4	6.9	4	19.4	1	32	1	7.10	1/8	MWB	MWB
Control /	0 %	2	2	4	5.1	4	19.5	1	32	1	7.5	1/9	BM	BM
Control /	0 %	3	3	4	6.3	4	19.3	1	33	1	7.6	1/10	CR	CR
Control /	0 %	4	1	3	6.3	3	19.3	3	34	3	7.9	1/11	CR	CR
			2	3	6.1	3	19.3	3	34	3	7.8			
			3	4	6.2	4	19.4	4	34	4	7.9			
			4	3	6.0	3	19.3	3	33	3	7.9			
			5	4	6.2	4	19.3	4	33	4	7.9			
Site Water /	0 %	0	All	4	9.3	4	18.6	1	34	1	7.7	1/2/09	✓	MWB
Site Water /	0 %	1	1	4	7.0	4	19.8	1	35	1	7.9	1/8	MWB	MWB
Site Water /	0 %	2	2	4	5.4	4	19.5	1	35	1	7.6	1/9	BM	BM
Site Water /	0 %	3	3	4	5.7	4	19.7	1	35	1	7.6	1/10	CR	CR
			1	3	8.3	3	19.4	3	35	3	7.9	1/11	CR	CR
			2	3	6.1	3	19.3	3	35	3	7.9			
Site Water /	0 %	4	4	3	6.7	3	19.4	3	36	3	7.9			
			5	4	5.8	4	19.3	4	36	4	7.9			
Site Water /	0 %	4	5	5	5.9	5	19.3	4	36	4	7.9			

NEWFIELDS

96 HOUR SUSPENDED PARTICULATE PHASE TEST WATER QUALITY DATASHEET

CLIENT City of Newport	PROJECT Marina Park	SPECIES <i>Mysidopsis bahia</i>	DILUTION WATER BATCH FSW010609
NEWFIELDS JOB NUMBER 1105-005-860	PROJECT MANAGER Bill Gardiner	NEWFIELDS LABORATORY Port Gamble Bath	PROTOCOL USEPAUSCOE 1998 / NEWFIELDS B10067
		TEST START DATE 07Jan09	TEST END DATE 11Jan09
		TIME 1615	

WATER QUALITY DATA

CLIENT/ NEWFIELDS ID	CONCENTRATION value units	DAY	REP	DO (mg/L)		TEMP (°C)		SALINITY (ppt)		pH		Date	Tech	FEEDING	
				> 3.7		20 ± 2		31 ± 2		7.8 ± 0.5					
				meter	mg/L	meter	°C	meter	ppt	meter	unit				
Comp C-U/	10 %	0	All	4	7.7	4	19.6	4	32	1	7.9	1/9/09	Y	AM, PM	
			1	4	6.4	4	19.9	1	32	1	7.9	1/8	MWB	MWB	
			2	4	4.8	4	19.5	1	32	1	7.5	1/9	BH	MWB	
			3	4	5.7	4	19.7	1	32	1	7.5	1/10	CR	MWB	
			1	3	6.2	3	19.4	3	34	3	7.9	1/11	CR	BH	
Comp C-U/	10 %	1	2	3	6.3	3	19.4	3	34	3	7.9				
			3	3	6.8	3	19.4	3	34	3	7.9				
			4	4	6.4	4	19.5	4	34	4	7.9				
			5	5	6.3	5	19.5	5	34	5	7.9				
			All	4	7.2	4	19.8	1	33	1	8.0	1/7/09	Y	MWB	MWB
Comp C-U/	50 %	1	1	4	6.6	4	19.9	1	33	1	7.9	1/8	MWB	MWB	
			2	4	5.4	4	19.6	1	33	1	7.6	1/9	BH	MWB	
			3	4	6.2	4	19.6	1	34	1	7.5	1/10	CR	MWB	
			1	3	7.9	3	19.5	3	34	3	7.9	1/11	CR	BH	
			2	3	6.1	3	19.5	3	34	3	7.9				
Comp C-U/	50 %	2	1	4	6.0	4	19.5	4	34	4	7.9				
			2	4	6.4	4	19.4	4	34	4	7.9				
			3	4	6.2	4	19.5	4	34	4	7.9				
			4	4	6.2	4	19.5	4	34	4	7.9				
			5	4	6.2	4	19.5	4	34	4	7.9				
Comp C-U/	50 %	3	All	4	6.4	4	19.8	1	34	1	8.3	1/3/09	Y	MWB	MWB
			1	4	5.4	4	19.7	1	34	1	8.0	1/8	MWB	MWB	
			2	4	5.0	4	19.8	1	35	1	7.6	1/9	BH	MWB	
			3	4	5.5	4	19.7	1	35	1	7.5	1/10	CR	MWB	
			1	3	6.1	3	19.5	3	36	3	7.9	1/11	CR	BH	
Comp C-U/	100 %	0	All	4	6.4	4	19.8	1	34	1	8.3	1/3/09	Y	MWB	MWB
			1	4	5.4	4	19.7	1	34	1	8.0	1/8	MWB	MWB	
			2	4	5.0	4	19.8	1	35	1	7.6	1/9	BH	MWB	
			3	4	5.5	4	19.7	1	35	1	7.5	1/10	CR	MWB	
			1	3	6.1	3	19.5	3	36	3	7.9	1/11	CR	BH	
Comp C-U/	100 %	1	1	4	6.4	4	19.8	1	34	1	8.3	1/3/09	Y	MWB	MWB
			2	4	5.4	4	19.7	1	34	1	8.0	1/8	MWB	MWB	
			3	4	5.0	4	19.8	1	35	1	7.6	1/9	BH	MWB	
			4	4	5.5	4	19.7	1	35	1	7.5	1/10	CR	MWB	
			5	4	6.1	4	19.5	4	36	4	7.9	1/11	CR	BH	
Comp C-U/	100 %	2	1	4	6.4	4	19.8	1	34	1	8.3	1/3/09	Y	MWB	MWB
			2	4	5.4	4	19.7	1	34	1	8.0	1/8	MWB	MWB	
			3	4	5.0	4	19.8	1	35	1	7.6	1/9	BH	MWB	
			4	4	5.5	4	19.7	1	35	1	7.5	1/10	CR	MWB	
			5	4	6.1	4	19.5	4	36	4	7.9	1/11	CR	BH	
Comp C-U/	100 %	3	All	4	6.4	4	19.8	1	34	1	8.3	1/3/09	Y	MWB	MWB
			1	4	5.4	4	19.7	1	34	1	8.0	1/8	MWB	MWB	
			2	4	5.0	4	19.8	1	35	1	7.6	1/9	BH	MWB	
			3	4	5.5	4	19.7	1	35	1	7.5	1/10	CR	MWB	
			4	4	6.1	4	19.5	4	36	4	7.9	1/11	CR	BH	
Comp C-U/	100 %	4	All	4	6.4	4	19.8	1	34	1	8.3	1/3/09	Y	MWB	MWB
			1	4	5.4	4	19.7	1	34	1	8.0	1/8	MWB	MWB	
			2	4	5.0	4	19.8	1	35	1	7.6	1/9	BH	MWB	
			3	4	5.5	4	19.7	1	35	1	7.5	1/10	CR	MWB	
			4	4	6.1	4	19.5	4	36	4	7.9	1/11	CR	BH	

1/7/2009 Mysid SPP Test WQ

① WC CR 1/10/09

NEWFIELDS

96 HOUR SUSPENDED PARTICULATE PHASE TEST WATER QUALITY DATASHEET

CLIENT City of Newport	PROJECT Marina Park	SPECIES <i>Mysidopsis bahia</i>	DILUTION WATER BATCH FSW010609
NEWFIELDS JOB NUMBER 1105-005-860	PROJECT MANAGER Bill Gardiner	NEWFIELDS LABORATORY Port Gamble Bath	PROTOCOL USEPAUSCOE 1998 / NEWFIELDS B10067
		TEST START DATE 07Jan09	TEST END DATE 11Jan09
		TIME 1045	

WATER QUALITY DATA

CLIENT/NEWFIELDS ID	CONCENTRATION value units	DAY	REP	DO (mg/L)		TEMP (C)		SALINITY (ppt)		pH		Date	Tech	FEEDING
				> 3.7		20 ± 2		31 ± 2		7.8 ± 0.5				
				meter	mg/L	meter	TEMP. °C	meter	SALINITY	meter	pH			
Comp C-L /	10 %	0	All	4	8.2	4	19.1	1	32	1	7.8	1/10/09	✓	Am 1 pm
			1	4	6.3	4	19.9	1	32	1	7.9	1/8	NMB	NMB
			2	4	5.1	4	19.6	1	32	1	7.6	1/9	BH	BH
			3	4	5.9	4	19.6	1	32	1	7.5	1/10	CR	CR
			1	3	5.8	3	19.4	3	34	3	7.8	1/11	CR	CR
Comp C-L /	10 %	1	1	4	6.3	4	19.9	1	32	1	7.9	1/8	NMB	NMB
			2	4	5.1	4	19.6	1	32	1	7.6	1/9	BH	BH
			3	4	5.9	4	19.6	1	32	1	7.5	1/10	CR	CR
			1	3	5.8	3	19.4	3	34	3	7.8	1/11	CR	CR
			2	4	5.5	4	19.5	1	34	1	7.8	1/11	CR	CR
Comp C-L /	10 %	2	1	4	6.0	4	19.5	1	34	1	7.9	1/9	✓	✓
			2	4	5.6	4	19.5	1	34	1	7.7	1/9	✓	✓
			3	4	5.9	4	19.6	1	32	1	7.5	1/10	CR	CR
			1	3	5.7	3	19.5	13	33	3	7.9	1/11	CR	CR
			2	4	5.8	4	19.5	1	34	1	7.8	1/11	CR	CR
Comp C-L /	50 %	1	All	4	8.1	4	19.2	1	33	1	7.8	1/7/09	✓	✓
			1	4	6.3	4	19.8	1	33	1	7.9	1/8	NMB	NMB
			2	4	4.7	4	19.6	1	33	1	7.6	1/9	BH	BH
			3	4	5.7	4	19.7	1	34	1	7.5	1/10	CR	CR
			1	3	5.7	3	19.5	13	33	3	7.9	1/11	CR	CR
Comp C-L /	50 %	2	1	4	5.8	4	19.5	1	34	1	7.8	1/11	CR	CR
			2	4	5.2	4	19.5	1	34	1	7.9	1/11	CR	CR
			3	4	5.2	4	19.5	1	34	1	7.9	1/11	CR	CR
			4	4	6.0	4	19.5	1	33	1	7.9	1/11	CR	CR
			5	4	5.8	4	19.5	1	33	1	7.9	1/11	CR	CR
Comp C-L /	50 %	3	All	4	8.1	4	19.4	1	34	1	7.8	1/7/09	✓	✓
			1	4	6.1	4	19.8	1	34	1	7.9	1/8	NMB	NMB
			2	4	4.7	4	19.6	1	34	1	7.6	1/9	BH	BH
			3	4	5.8	4	19.8	1	35	1	7.6	1/10	CR	CR
			1	3	6.1	3	19.5	3	35	3	7.8	1/11	CR	CR
Comp C-L /	100 %	0	All	4	8.1	4	19.4	1	34	1	7.8	1/7/09	✓	✓
			1	4	6.1	4	19.8	1	34	1	7.9	1/8	NMB	NMB
			2	4	4.7	4	19.6	1	34	1	7.6	1/9	BH	BH
			3	4	5.8	4	19.8	1	35	1	7.6	1/10	CR	CR
			1	3	6.1	3	19.5	3	35	3	7.8	1/11	CR	CR
Comp C-L /	100 %	1	1	4	6.1	4	19.8	1	34	1	7.9	1/8	NMB	NMB
			2	4	4.7	4	19.6	1	34	1	7.6	1/9	BH	BH
			3	4	5.8	4	19.8	1	35	1	7.6	1/10	CR	CR
			1	3	6.1	3	19.5	3	35	3	7.8	1/11	CR	CR
			2	4	5.9	4	19.5	1	35	1	7.8	1/11	CR	CR
Comp C-L /	100 %	2	1	4	5.9	4	19.5	1	35	1	7.8	1/11	CR	CR
			2	4	5.6	4	19.5	1	36	1	7.8	1/11	CR	CR
			3	4	5.7	4	19.5	1	35	1	7.9	1/11	CR	CR
			4	4	5.7	4	19.5	1	35	1	7.9	1/11	CR	CR
			5	4	5.9	4	19.5	1	35	1	7.8	1/11	CR	CR
Comp C-L /	100 %	3	1	4	6.1	4	19.5	3	35	3	7.8	1/11	CR	CR
			2	4	5.9	4	19.5	1	35	1	7.8	1/11	CR	CR
			3	4	5.6	4	19.5	1	36	1	7.8	1/11	CR	CR
			4	4	5.7	4	19.5	1	35	1	7.9	1/11	CR	CR
			5	4	5.9	4	19.5	1	35	1	7.8	1/11	CR	CR
Comp C-L /	100 %	4	All	4	8.1	4	19.4	1	34	1	7.8	1/7/09	✓	✓
			1	4	6.1	4	19.8	1	34	1	7.9	1/8	NMB	NMB
			2	4	4.7	4	19.6	1	34	1	7.6	1/9	BH	BH
			3	4	5.8	4	19.8	1	35	1	7.6	1/10	CR	CR
			1	3	6.1	3	19.5	3	35	3	7.8	1/11	CR	CR



Ammonia Analysis Total Ammonia (mg/L)

Client/Project: <i>City of Newport / Marina</i>	Organism: <i>Myard</i>	NewFields Test ID:	Test Duration (days): <i>4</i>
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PRETEST / INITIAL / FINAL / OTHER (circle one) **DAY of TEST: 0**
OVERLYING (OV) / POREWATER (PW) (circle one)

Calibration Standards Temperature		Sample temperature should be within $\pm 1^{\circ}\text{C}$ of standards temperature at time and date of analysis.
Date:	Temperature:	
<i>1/7/09</i>	<i>19</i>	

Sample ID or Description	Conc. or Rep	Date of Sampling and Initials	Ammonia Value (mg/L)	Temp $^{\circ}\text{C}$	Date of Reading and Initials	Sample Preserved (Y/N)	pH	Sal (ppt)	Sulf. mg/L
<i>Control</i>		<i>1/7/09 +</i>	<i>0.0767</i>	<i>19</i>	<i>1/7/09 L</i>	<i>N</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
<i>Site water</i>			<i>0.00</i>						
<i>C-L #</i>	<i>10</i>		<i>0.00</i>						
<i>C-L</i>	<i>50</i>		<i>0.00</i>						
<i>C-L</i>	<i>100</i>		<i>0.00</i>						
<i>C-U</i>	<i>10</i>		<i>0.00</i>						
<i>C-U</i>	<i>50</i>		<i>0.00</i>						
<i>C-U</i>	<i>100</i>		<i>0.00</i>						

96 HOUR SUSPENDED PARTICULATE PHASE TEST DATA SHEET 3



SPECIES
Mysidopsis bahia

CLIENT City of Newport PROJECT Marina Park NEWFIELDS JOB NO. 1105-005-860 PROJECT MANAGER Bill Gardiner

SURVIVAL & BEHAVIOR DATA

OBSERVATIONS KEY	CLIENT/NEWFIELDS ID	CONC. value	UNITS	REP. NUMBER	Day 1			Day 2			Day 3			Day 4						
					DATE	TECHNICIAN	#ALIVE	#DEAD	OBS	DATE	TECHNICIAN	#ALIVE	#DEAD	OBS	DATE	TECHNICIAN	#ALIVE	#DEAD	OBS	
Control / .	.	0%		1	10	11/8/09	MWB	10	0	N	10	0	N	10	0	N	10	0	N	
				2	10	9	1	2	9	0	N	9	0	N	9	0	N	9	0	N
				3	10	10	0	2	10	0	N	10	0	N	10	0	N	10	0	N
				4	10	10	0	2	10	0	N	10	0	N	10	0	N	10	0	N
				5	10	10	0	2	10	0	N	10	0	N	10	0	N	10	0	N
Site Water /	.	0%		1	10	10	0	N	10	0	N	10	0	N	10	0	N	10	0	N
				2	10	10	0	N	10	0	N	10	0	N	10	0	N	10	0	N
				3	10	10	0	N	10	0	N	10	0	N	10	0	N	10	0	N
				4	10	10	0	N	10	0	N	10	0	N	10	0	N	10	0	N
				5	10	10	0	N	10	0	N	10	0	N	10	0	N	10	0	N
Comp C-U / .	.	10%		1	10	10	0	N	10	0	N	10	0	N	10	0	N	10	0	N
				2	10	9	0	N	10	0	N	10	0	N	10	0	N	10	0	N
				3	10	10	0	N	10	0	N	10	0	N	10	0	N	10	0	N
				4	10	10	0	N	10	0	N	10	0	N	10	0	N	10	0	N
				5	10	10	0	N	10	0	N	10	0	N	10	0	N	10	0	N
Comp C-U / .	.	50%		1	10	10	0	N	10	0	N	10	0	N	10	0	N	10	0	N
				2	10	10	0	N	10	0	N	10	0	N	10	0	N	10	0	N
				3	10	10	0	N	10	0	N	10	0	N	10	0	N	10	0	N
				4	10	10	0	N	10	0	N	10	0	N	10	0	N	10	0	N
				5	10	10	0	N	10	0	N	10	0	N	10	0	N	10	0	N
Comp C-U / .	.	100%		1	10	10	0	N	10	0	N	10	0	N	10	0	N	10	0	N
				2	10	10	0	N	10	0	N	10	0	N	10	0	N	10	0	N
				3	10	10	0	N	10	0	N	10	0	N	10	0	N	10	0	N
				4	10	10	0	N	10	0	N	10	0	N	10	0	N	10	0	N
				5	10	10	0	N	10	0	N	10	0	N	10	0	N	10	0	N

96 HOUR SUSPENDED PARTICULATE PHASE TEST DATA SHEET 3



SPECIES
Mysidopsis bahia

CLIENT: City of Newport
 PROJECT: Marina Park
 NEWFIELDS JOB NO.: 1105-005-860
 PROJECT MANAGER: Bill Gardner

SURVIVAL & BEHAVIOR DATA

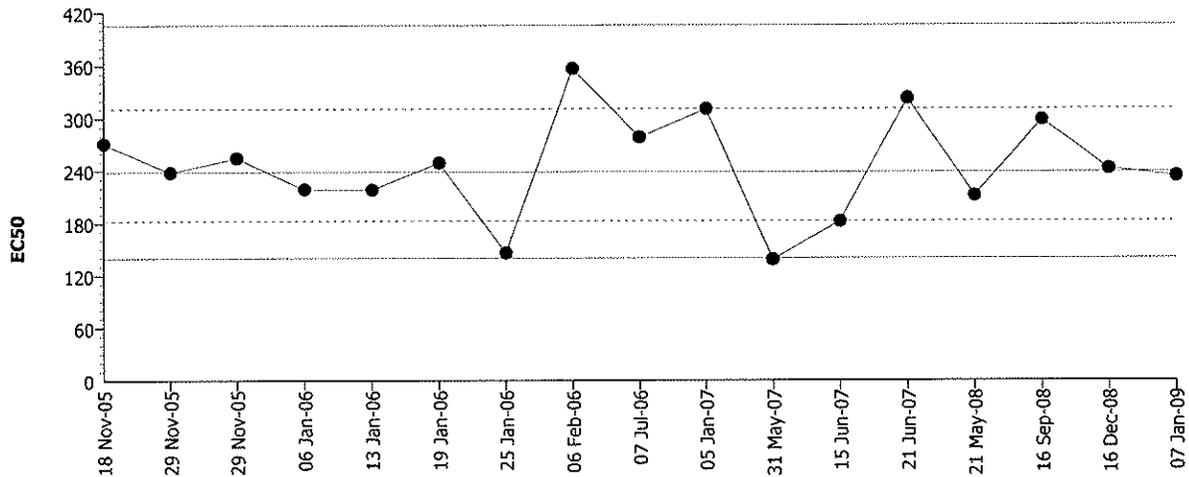
OBSERVATIONS KEY	Day 1			Day 2			Day 3			Day 4		
	DATE	TECHNICIAN	OBS									
Comp C-L / .	10	10	N	10	0	N	10	0	N	10	0	N
	2	10	N	10	0	N	10	0	N	10	0	N
	3	10	N	10	0	N	10	0	N	10	0	N
	4	10	N	10	0	N	10	0	N	10	0	N
	5	10	N	10	0	N	10	0	N	10	0	N
Comp C-L / .	10	10	N	10	0	N	10	0	N	10	0	N
	2	10	N	10	0	N	10	0	N	10	0	N
	3	10	N	10	0	N	10	0	N	10	0	N
	4	10	N	10	0	N	10	0	N	10	0	N
	5	10	N	10	0	N	10	0	N	10	0	N
Comp C-L / .	100	100	N	100	0	N	100	0	N	100	0	N
	2	100	N	100	0	N	100	0	N	100	0	N
	3	100	N	100	0	N	100	0	N	100	0	N
	4	100	N	100	0	N	100	0	N	100	0	N
	5	100	N	100	0	N	100	0	N	100	0	N

① IE, MWB 1/8/09
 ② Body found alive 1/9/09 BH

Reference Toxicant 96-h Acute Survival Test

NewFields

Test Type: Survival Organism: Mysidopsis bahia (Atlantic Mysid) Material: Copper sulfate
Protocol: EPA/821/R-02-012 (2002) Endpoint: Proportion Survived Source: Reference Toxicant-REF



Mean: 238.12 Count: 16 -1s Warning Limit: 182.396 -2s Action Limit: 139.713
Sigma: CV: 30.55% +1s Warning Limit: 310.868 +2s Action Limit: 405.841

Quality Control Data

Point	Year	Month	Day	Data	Delta	Sigma	Warning	Action	Test Link	Analysis
1	2005	Nov	18	270.9431	32.82316	0.48439			04-9207-2519	06-7062-9566
2			29	237.8382	-0.28174	-0.00444			13-3749-4170	12-0215-0194
3			29	254.1857	16.06576	0.24491			14-4179-4943	15-0893-7739
4	2006	Jan	6	218.4655	-19.6544	-0.32314			04-0317-1797	12-3195-9925
5			13	217.9948	-20.1251	-0.33123			16-1881-1237	12-7567-2246
6			19	248.7937	10.67376	0.16448			08-0452-0770	17-2979-4106
7			25	145.5691	-92.5508	-1.84597	(-)		11-3116-1669	06-2279-5163
8		Feb	6	356.1905	118.0705	1.51051	(+)		10-1630-9590	13-6331-1854
9		Jul	7	278.1486	40.02866	0.58284			02-9682-5563	11-9863-7491
10	2007	Jan	5	310.4012	72.28126	0.99437			10-8470-2803	06-4877-5470
11		May	31	137.8252	-100.294	-2.05102	(-)	(-)	10-1324-7704	03-5962-2699
12		Jun	15	181.7338	-56.3861	-1.01365	(-)		08-4148-7978	10-6333-9348
13			21	322.6705	84.55056	1.13978	(+)		00-4869-4501	07-4507-6179
14	2008	May	21	211.1782	-26.9418	-0.45040			17-4827-0455	10-0698-3422
15		Sep	16	297.9535	59.83356	0.84084			07-0996-4754	04-2869-2915
16		Dec	16	241.8133	3.69336	0.05773			03-2797-2997	02-1235-2262
17	2009	Jan	7	233.2583	-4.86164	-0.07738			00-8997-7963	12-2358-6105

CETIS Analysis Detail

Reference Toxicant 96-h Acute Survival Test NewFields

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Proportion Survived	Comparison	00-8997-7963	00-8997-7963	26 Jan-09 3:57 PM	CETISv1.1.2

Method	Ait H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Steel Many-One Rank	C > T	Rank		125	250	0.8	176.777	8.16%

Group Comparisons

Control	vs	Conc-mg/L	Statistic	Critical	P-Value	Ties	Decision(0.05)
Dilution Water		62.5	18	10	0.7500	4	Non-Significant Effect
		125	14	10	0.2626	4	Non-Significant Effect
		250	10	10	0.0277	0	Significant Effect

ANOVA Table

Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	1.288702	0.4295675	3	65.60	0.00000	Significant Effect
Error	0.0785842	0.0065487	12			
Total	1.36728660	0.4361161	15			

ANOVA Assumptions

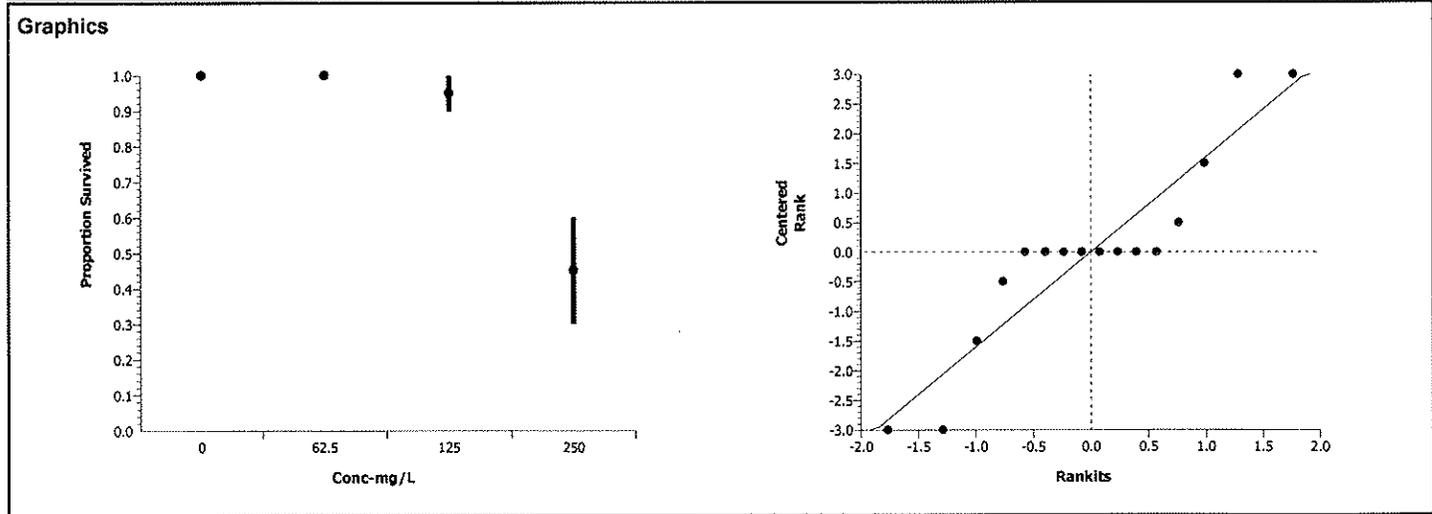
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Modified Levene	12.99229	5.95254	0.00045	Unequal Variances
Distribution	Shapiro-Wilk W	0.92162		0.17909	Normal Distribution

Data Summary

Conc-mg/L	Control Type	Count	Original Data				Transformed Data			
			Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	4	1.00000	1.00000	1.00000	0.00000	11.5	11.5	11.5	0
62.5		4	1.00000	1.00000	1.00000	0.00000	11.5	11.5	11.5	0
125		4	0.95000	0.90000	1.00000	0.05773	8.5	5.5	11.5	3.46410
250		4	0.45000	0.30000	0.60000	0.12910	2.5	1	4	1.29099

Data Detail

Conc-mg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	1.00000	1.00000	1.00000	1.00000						
62.5		1.00000	1.00000	1.00000	1.00000						
125		0.90000	0.90000	1.00000	1.00000						
250		0.60000	0.30000	0.40000	0.50000						



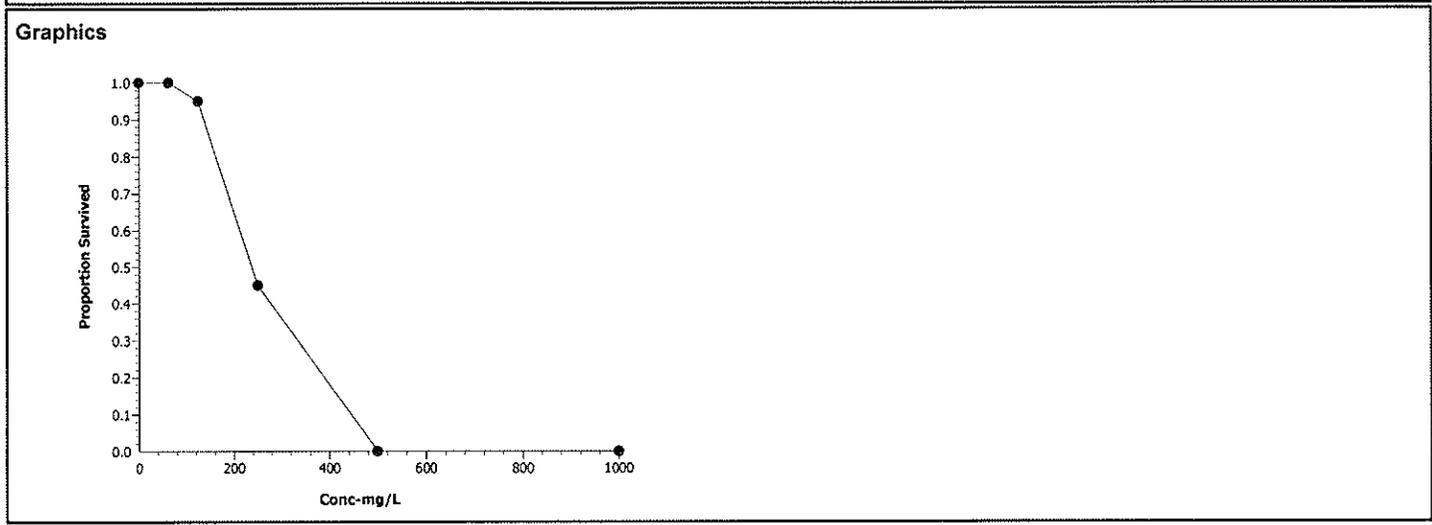
CETIS Analysis Detail

Reference Toxicant 96-h Acute Survival Test	NewFields
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Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Proportion Survived	Trimmed Spearman-Karber	00-8997-7963	00-8997-7963	26 Jan-09 4:11 PM	CETISv1.1.2

Spearman-Karber Options					Point Estimates		
Threshold Option	Lower Threshold	Trim	Mu	Sigma	EC50/LC50	95% LCL	95% UCL
Control Threshold	0	0.00%	2.367837	0.0258518	233.25830	207.07770	262.74870

Data Summary		Calculated Variate(A/B)							
Conc-mg/	Control Type	Count	Mean	Minimum	Maximum	SE	SD	A	B
0	Dilution Water	4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
62.5		4	1.00000	1.00000	1.00000	0.00000	0.00000	40	40
125		4	0.95000	0.90000	1.00000	0.01179	0.05773	38	40
250		4	0.45000	0.30000	0.60000	0.02635	0.12910	18	40
500		4	0.00000	0.00000	0.00000	0.00000	0.00000	0	40
1000		4	0.00000	0.00000	0.00000	0.00000	0.00000	0	40



CETIS Test Summary

Report Date:

26 Jan-09 4:17 PM

Test Link:

00-8997-7963

Reference Toxicant 96-h Acute Survival Test							NewFields		
Test No:	09-1778-3253	Test Type:	Survival	Duration:	4d 1h				
Start Date:	07 Jan-09 05:20 PM	Protocol:	EPA/821/R-02-012 (2002)	Species:	Mysidopsis bahia				
Ending Date:	11 Jan-09 07:18 PM	Dil Water:	Laboratory Seawater	Source:	Aquatic Biosystems, CO				
Setup Date:	07 Jan-09 05:20 PM	Brine:	Not Applicable						
Comments:	P070930.100								
Sample No:	07-9059-4503	Code:	790594503	Client:	Internal Lab				
Sample Date:	07 Jan-09 05:20 PM	Material:	Copper sulfate	Project:	Reference Toxicant				
Receive Date:		Source:	Reference Toxicant						
Sample Age:	N/A	Station:	P070930.100						
Point Estimate Summary									
Analysis	Endpoint	% Effect	Conc-mg/L	95% LCL	95% UCL	Method			
12-2358-6105	Proportion Survived	50	233.2583	207.0777	262.7487	Trimmed Spearman-Kärber			
Proportion Survived Summary									
Conc-mg/L	Control Type	Reps	Mean	Minimum	Maximum	SE	SD	CV	
0	Dilution Water	4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%	
62.5		4	1.00000	1.00000	1.00000	0.00000	0.00000	0.00%	
125		4	0.95000	0.90000	1.00000	0.02887	0.05774	6.08%	
250		4	0.45000	0.30000	0.60000	0.06455	0.12910	28.69%	
500		4	0.00000	0.00000	0.00000	0.00000	0.00000	0.00%	
1000		4	0.00000	0.00000	0.00000	0.00000	0.00000	0.00%	
Proportion Survived Detail									
Conc-mg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4				
0	Dilution Water	1.00000	1.00000	1.00000	1.00000				
62.5		1.00000	1.00000	1.00000	1.00000				
125		0.90000	0.90000	1.00000	1.00000				
250		0.60000	0.30000	0.40000	0.50000				
500		0.00000	0.00000	0.00000	0.00000				
1000		0.00000	0.00000	0.00000	0.00000				

CETIS Data Worksheet

Reference Toxicant 96-h Acute Survival Test

NewFields

Start Date: 07 Jan-09 05:20 PM **Species:** Mysidopsis bahia **Sample Code:** 790594503
Ending Date: 11 Jan-09 07:18 PM **Protocol:** EPA/821/R-02-012 (2002) **Sample Source:** Reference Toxicant
Sample Date: 07 Jan-09 05:20 PM **Material:** Copper sulfate **Sample Station:** P070930.100

Conc-mg/L	Code	Rep	Pos	# Exposed	# Survived	Notes
0	D	1	14	10	10	
0	D	2	19	10	10	
0	D	3	3	10	10	
0	D	4	12	10	10	
62.5		1	7	10	10	
62.5		2	5	10	10	
62.5		3	21	10	10	
62.5		4	6	10	10	
125		1	2	10	9	
125		2	23	10	9	
125		3	13	10	10	
125		4	8	10	10	
250		1	11	10	6	
250		2	1	10	3	
250		3	22	10	4	
250		4	18	10	5	
500		1	4	10	0	
500		2	17	10	0	
500		3	24	10	0	
500		4	20	10	0	
1000		1	9	10	0	
1000		2	15	10	0	
1000		3	16	10	0	
1000		4	10	10	0	

**REFERENCE TOXICANT TEST
SURVIVAL DATASHEET**



SPECIES *Mysidopsis bahia*
 NEWFIELDS LABORATORY Port Gamble Bath
 PROJECT MANAGER Bill Gardiner
 PROTOCOL USEPAUSCOE 1998

CLIENT City of Newport
 PROJECT Marina Park
 NEWFIELDS JOB NO. ---

SURVIVAL & BEHAVIOR DATA

OBSERVATION KEY N = normal LOE= loss of equilibrium Q = quiescent DC = discoloration NB = no body F= Floating on Surface					DAY 1			DAY 2			DAY 3			DAY 4		
					INITIAL # OF ORGANISMS 10			DATE	DATE	DATE	DATE	TECHNICIAN	TECHNICIAN	TECHNICIAN	TECHNICIAN	
					CLIENT/ NEWFIELDS ID	CONC. value units	REP	INITIAL NUMBER	DATE	DATE	DATE	DATE	TECHNICIAN	TECHNICIAN	TECHNICIAN	TECHNICIAN
					#ALIVE	#DEAD	OBS	#ALIVE	#DEAD	OBS	#ALIVE	#DEAD	OBS	#ALIVE	#DEAD	OBS
Ref.Tox.- copper	0 mg/l	1	10	10	0	N	10	0	N	10	0	N	10	0	N	
		2	10	0	N	10	0	N	10	0	N	10	0	N		
		3	10	0	N	10	0	N	10	0	N	10	0	N		
		4	10	0	N	10	0	N	10	0	N	10	0	N		
		5														
Ref.Tox.- copper	62.5 mg/l	1	10	10	0	N	10	0	N	10	0	N	10	0	N	
		2	10	0	N	10	0	N	10	0	N	10	0	N		
		3	10	0	N	10	0	N	10	0	N	10	0	N		
		4	10	0	N	10	0	N	10	0	N	10	0	N		
		5														
Ref.Tox.- copper	125 mg/l	1	10	10	0	N	9	0	NB	9	0	N	9	0	N	
		2	10	0	N	9	1	N	9	0	N	9	0	N		
		3	10	0	N	10	0	N	10	0	N	10	0	N		
		4	10	0	N	10	0	N	10	0	N	10	0	N		
		5														
Ref.Tox.- copper	250 mg/l	1	10	10	0	Q	7	3	Q	6	1	Q	6	0	Q	
		2	10	0	Q	5	5	Q	4	0	NB	3	1	Q		
		3	10	0	N	6	4	Q	5	0	NB	4	1	Q		
		4	10	0	N	6	4	Q	4	1	NB	5	0	Q		
		5														
Ref.Tox.- copper	500 mg/l	1	6	4	Q	4	2	Q	2	2	Q	0	2	N		
		2	9	1	Q	4	5	Q	4	0	N	0	4	N		
		3	6	4	Q	1	5	Q	1	0	N	0	1	N		
		4	6	4	Q	1	5	Q	1	0	N	0	1	N		
		5														
Ref.Tox.- copper	1000 mg/l	1	6	4	Q	0	6									
		2	7	3	Q	2	5	Q	0	2						
		3	5	5	Q	1	4	Q	0	1						
		4	6	4	Q	2	4	Q	1	1	Q	0	1	N		
		5														

① IE, MMB 1/9/09
 ② IE CR 1/10/09

NEWFIELDS

Reference Toxicant Test Water Quality Datasheet

CLIENT	PROJECT	SPECIES	PROTOCOL	TEST START DATE	TIME
City of Newport	Marina Park	<i>Mysidopsis batria</i>	Port Gamble / Bath	07Jan09	1920
NEWFIELDS JOB NUMBER 1105-005-860	PROJECT MANAGER Bill Gardiner	QUANTITY OF STOCK TARGET 1572 mL	QUANTITY OF DILUENT TARGET 2000 mL	TEST END DATE 11Jan09	TIME 1918
NEWFIELDS LABORATORY Port Gamble Bath	DILUTION WATER BATCH FSW010609	QUANTITY OF STOCK ACTUAL 3,934.71 mL	QUANTITY OF DILUENT ACTUAL 2000.09	INITIAL AND DATE 1/7 2009	PROTOCOL USEPAUSCOE 1998 / NEWFIELDS B10067

WATER QUALITY DATA

CLIENT/NEWFIELDS ID	CONCENTRATION value units	DAY	REP	DO (mg/L)		TEMP (°C)		SALINITY (ppt)		PH		Date	Tech	FEEDING	
				> 3.7 D.O. meter	mg/L	20 ± 2 TEMP °C	meter	SALINITY ppt	7.8 ± 0.5 PH unit						
Ref. Tox.-copper 0 mg/L		0	All	4	8.0	4	18.0	1	32	1	7.9	1/7/09	TS	X	MWB
		1	1	4	6.9	4	20.0	1	32	1	7.8	1/8	MWB	X	MWB
		2	2	4	4.5	4	19.5	1	32	1	7.4	1/9	MWB	X	BH
		3	3	4	4.0	4	19.1	1	32	1	7.3	1/10	CR	CR	CR
		4	4	3	5.6	3	19.5	3	33	3	7.7	1/11	CR	CR	CR
		0	All	4	8.0	4	18.0	1	32	1	7.9	1/7/09	TS	X	MWB
		1	1	4	6.8	4	20.0	1	32	1	7.8	1/8	MWB	X	MWB
		2	2	4	5.1	4	19.4	1	32	1	7.4	1/9	BH	X	BH
		3	3	4	4.1	4	19.1	1	32	1	7.4	1/10	CR	CR	CR
		4	4	3	5.6	3	19.7	3	32	3	7.7	1/11	CR	CR	CR
		0	All	4	8.0	4	18.0	1	32	1	7.9	1/7/09	TS	X	MWB

Ref. Tox.-copper
125 mg/L

**Reference Toxicant Test
Water Quality Datasheet**

CLIENT	City of Newport	PROJECT	Marina Park	SPECIES	<i>Mysidopsis bahia</i>	PROTOCOL	Port Gamble / Bath	TEST START DATE	07Jan09	TIME	1730
NEWFIELDS JOB NUMBER	1105-005-860	PROJECT MANAGER	Bill Gardiner	QUANTITY OF STOCK TARGET	1,572 ml	QUANTITY OF DILUENT TARGET	2000 ml	TEST END DATE	11Jan09	TIME	
NEWFIELDS LABORATORY	Port Gamble Bath	DILUTION WATER BATCH	FSW010609	QUANTITY OF STOCK ACTUAL	4,936 ml	QUANTITY OF DILUENT ACTUAL	2000.05	INITIALAND DATE	1/9/09	PROTOCOL	USEPAUSCOE 1998 / NEWFIELDS B10067

WATER QUALITY DATA

CLIENT/ NEWFIELDS ID	CONCENTRATION value units	DAY	REP	DO (mg/L)		TEMP (C)		SALINITY (ppt)		PH		Date	Tech	FEEDING
				> 3.7 D.O. meter	mg/L	TEMP. °C	meter	SALINITY ppt	meter	PH unit				
Ref.Tox.-copper	250 mg/L	0	All	4	7.9	4	18.0	1	32	1	7.9	1/7/09	TS	MMB
		1	1	4	6.9	4	20.1	1	32	1	7.9	1/8	MMB	MMB
		2	2	4	5.6	4	19.7	1	32	1	7.5	1/9	BH	MMB
		3	3	4	4.3	4	19.1	1	32	1	7.4	1/10	CR	CR
4	4	3	4	6.4	3	19.6	3	33	3	7.7	1/11	CR	CR	
Ref.Tox.-copper	500 mg/L	0	All	4	8.0	4	18.0	1	32	1	7.9	1/7/09	TS	MMB
		1	1	4	7.0	4	20.0	1	32	1	7.9	1/8	MMB	MMB
		2	2	4	5.9	4	19.7	1	32	1	7.6	1/9	BH	MMB
		3	3	4	5.0	4	19.1	1	32	1	7.5	1/10	CR	CR
4	4	3	4	6.2	3	19.5	3	33	3	7.7	1/11	CR	CR	
Ref.Tox.-copper	1000 mg/L	0	All	4	8.0	4	18.0	1	32	1	7.8	1/7/09	TS	MMB
		1	1	4	7.2	4	20.1	1	32	1	7.9	1/8	MMB	MMB
		2	2	4	6.1	4	19.7	1	32	1	7.6	1/9	BH	MMB
		3	3	4	5.2	4	19.1	1	32	1	7.5	1/10	CR	CR
4	4	3	4		3		3		3		1/11	CR	CR	



ORGANISM RECEIPT LOG

Date: 1/6/09		Time: 1430		NewFields Batch No. ABS 1546 Ab	
Organism: Mysidopsis bahia			Source: Aquatic Bio Systems		
Address: On File				Invoice Attached <input checked="" type="radio"/> Yes <input type="radio"/> No	
Phone: On File			Contact: Scott Kellman		
No. Ordered: 775		No. Received: 850		Source Batch: 1/3/09 hatch	
Condition of Organisms: Good			Approximate Size or Age: 3 day old		
Shipper: FedEx			B of L (Tracking No.): 6732 0732 1546		
Condition of Container: Good			Received By: BH		
Confirmation of ID of Organism: Yes <input type="radio"/> No <input checked="" type="radio"/>				Technician (Initials): BH	
Notes:					
pH (Units)	Temp. (°C)	D.O. (mg/L)	Conductivity or Salinity (Include Units)	Technician (Initials)	
7.5	18.8	15.4	24	BH	
Notes:					

NEWFIELDS

**LARVAL DEVELOPMENTAL SUSPENDED PARTICULATE PHASE TEST
WQ DATA SHEET**

CLIENT	PROJECT
City of Newport	Marina Park
NEWFIELDS JOB NUMBER	PROJECT MANAGER
1105-005-860	Bill Gardner

SPECIES	NEWFIELDS LABORATORY	PROTOCOL
Mytilus edulis (mussei)	Port Gamble Incubator	USEPA/STATE 1998, Region 4 FM 1993
TEST START DATE	TIME	TEST END DATE
07 Jan09	1800	09 Jan09
DILUTION WATER BATCH	TEMP Recorder (HOB0)#	
FSW010609.01	na	

WATER QUALITY DATA

Test conditions	CONCENTRATION value	UNITS	DAY	DO (mg/L)		TEMPERATURE (°C)		SALINITY (ppt)		pH (units)		AMMONIA		Sulfides		Date	Tech	
				meter	mg/L	meter	°C	meter	ppt	meter	unit	Techn.	mg/L	Techn.	mg/L			
Control / 0%	0%		0	4	7.9	4	16.8	1	31	1	7.8					1/7/09	✓	
			1	3	7.5	3	15.7	3	32	3	7.8					1/8	K	
			2	3	7.5	3	15.5	3	33	3	7.9					1/9	K	
			3															
			4															
			0	4	2.90	4	16.3	1	34	1	7.8						1/7/09	✓
			1	3	7.5	3	16.0	3	35	3	7.8						1/8	K
			2	3	7.3	3	15.6	3	36	3	7.9						1/9	K
			3															
			4															

012 1/7/09 ✓

NEWFIELDS

**LARVAL DEVELOPMENTAL SUSPENDED PARTICULATE PHASE TEST
WQ DATA SHEET**

CLIENT	PROJECT
City of Newport	Marina Park
NEWFIELDS JOB NUMBER	PROJECT MANAGER
1105-005-860	Bill Gardner

SPECIES	NEWFIELDS LABORATORY		
Mytilus edulis (mussel)	Port Gamble Incubator		
TEST START DATE	TIME	TEST END DATE	TIME
07Jan09		09Jan09	
DILUTION WATER BATCH		TEMP Recorder (HOB0)#	
FSW010609.01		na	

WATER QUALITY DATA

CLIENT/NEWFIELDS ID	CONCENTRATION	DAY	DO (mg/L)		TEMPERATURE (°C)		SALINITY (ppt)		pH (units)		Ammonia		Sulfides		Date	Tech
			meter	mg/L	meter	°C	meter	ppt	meter	unit	Techn.	mg/L	Techn.	mg/L		
			2.40		16 ± 1		31 ± 2		8.0 ± 1							
Comp C-U /	1%	0	4	8.3	4	16.4	1	32	1	7.9					1/7/09	A
		1	3	7.2	3	15.9	3	32	3	7.9					1/8	B
		2	3	7.3	3	15.6	3	33	3	8.0					1/9	TS
		3														
Comp C-U /	10%	0	4	8.1	4	16.6	1	32	1	7.9					1/7/09	A
		1	3	7.2	3	15.9	3	32	3	7.9					1/8	B
		2	3	7.1	3	15.7	3	33	3	8.0					1/9	TS
		3														
Comp C-U /	50%	0	4	7.5	4	16.5	1	35	1	8.0					1/7/09	A
		1	3	7.3	3	15.7	3	34	3	7.9					1/8	B
		2	3	6.8	3	16.6	3	35	3	8.0					1/9	TS
		3														
		4														

Disc 1/7/09 A



LARVAL DEVELOPMENTAL SUSPENDED PARTICULATE PHASE TEST WQ DATA SHEET

CLIENT	PROJECT
City of Newport	Marina Park
NEWFIELDS JOB NUMBER	PROJECT MANAGER
1105-005-860	Bill Gardiner

SPECIES	NEWFIELDS LABORATORY	PROTOCOL
Mytilus edulis (musssel)	Port Gamble Incubator	USEFACUSACE 1998, Region 4 RML 1999
TEST START DATE	TIME	TEST END DATE
07Jan09		09Jan09
DILUTION WATER BATCH		TEMP Recorder (HOBO)#
FSW010609.01		na

WATER QUALITY DATA

Test conditions	DO (mg/L)		TEMPERATURE (°C)		Salinity (ppt)		pH (units)		Ammonia		Sulfides		Date	Tech	
	value	units	meter	mg/L	meter	°C	meter	ppt	meter	unit	Techn.	mg/L			Techn.
Comp C-U/	100 %		≥4.0		16 ± 1		31 ± 2		8.0 ± 1						
														1/7/09	V
														1/8	TS
														1/9	TS



LARVAL DEVELOPMENTAL SUSPENDED PARTICULATE PHASE TEST WQ DATA SHEET

CLIENT City of Newport NEWFIELDS JOB NUMBER 1 105-005-860	PROJECT Marina Park PROJECT MANAGER Bill Gardiner
--	--

SPECIES Mytilus edulis (mussel)	NEWFIELDS LABORATORY Port Gamble Incubator
TEST START DATE 07Jan09	TEST END DATE 09Jan09
DILUTION WATER BATCH FSW010609.01	
TEMP Recorder (HOBQ)# na	
PROTOCOL USEPSPACE 1998, Report 4 R1M 1999	

WATER QUALITY DATA

CLIENT/NEWFIELDS ID	CONCENTRATION value	UNITS	DAY	DO (mg/L)		TEMPERATURE (°C)		SALINITY (ppt)		pH (units)		Ammonia		Sulfides		Date	Tech
				meter	mg/L	meter	°C	meter	ppt	meter	unit	Techn.	mg/L	Techn.	mg/L		
Comp C-L/	1%		0	4	7.9	4	16.5	1	32	1	8.1					1/7/09	J
			1	3	7.2	3	15.9	3	32	3	8.0					1/8	T
			2	3	6.9	3	15.6	3	33	3	8.1					1/9	T
			3														
Comp C-L/	10%		0	4	8.6	4	16.6	1	32	1	7.9					1/7/09	J
			1	3	7.3	3	15.6	3	33	3	8.0					1/8	T
			2	3	7.4	3	15.5	3	33	3	8.0					1/9	T
			3														
Comp C-L/	50%		0	4	9.0	4	16.6	1	33	1	7.9					1/7/09	J
			1	3	7.3	3	15.5	3	35	3	8.0					1/8	T
			2	3	7.4	3	15.4	3	36	3	8.0					1/9	T
			3														
			0	4													
			1	3													
			2	3													
			3														
			0	4													
			1	3													
			2	3													
			3														

NEWFIELDS

LARVAL DEVELOPMENTAL SUSPENDED PARTICULATE PHASE TEST
WQ DATA SHEET

CLIENT	PROJECT
City of Newport	Marina Park
NEWFIELDS JOB NUMBER	PROJECT MANAGER
1105-005-860	Bill Gardiner

SPECIES	NEWFIELDS LABORATORY	PROTOCOL
Mytilus edulis (musssel)	Port Gamble Incubator	USEPA/USACE 1980, Region 4 FRM 1993
TEST START DATE	TIME	TEST END DATE
07 Jan09		09 Jan09
DILUTION WATER BATCH		TEMP Recorder (HOB0)#
FSW010609.01		na

WATER QUALITY DATA

Test cotions	DO (mg/L)		TEMPERATURE (°C)		Salinity (ppt)		pH (units)		Ammonia		Sulfides		Date	Tech
	value	units	meter	mg/L	meter	°C	meter	ppt	meter	unit	Techn.	mg/L		
CLIENT/NEWFIELDS ID	24.0		16 ± 1		31 ± 2		8.0 ± 1							
	0	4	8.0	4	16.9	1	34	1	7.8				1/7/09	J
	1	3	7.4	3	15.9	3	35	3	7.9				1/8	TS
	2	3	7.3	3	15.5	3	36	3	8.0				1/9	TS
3														
4														

Sample ID or Description	Conc. or Rep	Date of Sampling and Initials	Ammonia Value (mg/L)	Temp °C	Date of Reading and Initials	Sample Preserved (Y/N)	pH	Sal (ppt)	Sulf. mg/L
NECF08-Ref		1/5/09 ✓			1/5/09 ✓	N			
NECF¹⁸-1		↓			↓	↓			
NECF08-2		↓			↓	↓			
MARINA PARK			Initial NH ₃						
C.L 1		1/7/09 MMB	<0.5						
↓ 10		↓	<0.5						
↓ 50		↓	<0.5						
↓ 100		↓	<0.5						
C.W 1		1/7/09 MMB	<0.5						
↓ 10		↓	<0.5						
↓ 50		↓	<0.5						
↓ 100		↓	<0.5						
			Final NH ₃						
⊗		1/9/09 MMB	<0.5						
C.L 1		↓	<0.5						
↓ 10		↓	<0.5						
↓ 50		↓	<0.5						
↓ 100		↓	<0.5						
C.W 1		↓	<0.5						
↓ 10		↓	<0.5						
↓ 50		↓	<0.5						
↓ 100		↓	0.506						

BIVALVE LARVAL DEVELOPMENTAL SUSPENDED PARTICULATE PHASE ENDPOINT DATA SHEET



SPECIES
Mytilus edulis (muschel)

CLIENT City of Newport	PROJECT Marina Park	NEWFIELDS JOB NUM 1105-005-860	PROJECT MANAGER Bill Gardiner	NEWFIELDS LABORATORY Port Gamble Incubator	PROTOCOL USEPAUSACE 1998, Region 4
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LARVAL OBSERVATION DATA

CLIENT/NEWFIELDS ID	CONCENTRATION		VIAL NUMBER	REP	NUMBER NORMAL	NUMBER ABNORMAL	DATE	TECHNICIAN	COMMENTS
	value	units							
ZERO-TIME (PRE)	0 %			1	297		1/20/09 ↓ ↓ ↓	CR ↓ ↓ ↓	
				2	270				
				3	266				
				4	308				
				5	302				
Control / .	0 %			1	269	5	1/19/09 ↓ ↓ ↓	CR ↓ ↓ ↓	
				2	271	12			
				3	271	14			
				4	270	7			
				5	281	7			
Site Water Control /	0 %			1	253	7	↓ ↓ ↓	↓ ↓ ↓	
				2	284	4			
				3	275	5			
				4	294	4			
				5	246	6			

BIVALVE LARVAL DEVELOPMENTAL SUSPENDED PARTICULATE PHASE ENDPOINT DATA SHEET



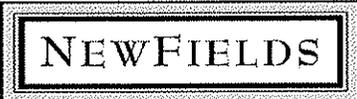
SPECIES
Mytilus edulis (musssel)

CLIENT City of Newport	PROJECT Marina Park	NEWFIELDS JOB NUM 1105-005-860	PROJECT MANAGER Bill Gardiner	NEWFIELDS LABORATORY Port Gamble Incubator	PROTOCOL USEPA/USACE 1998, Region 4
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LARVAL OBSERVATION DATA

CLIENT/NEWFIELDS ID	CONCENTRATION		VIAL NUMBER	REP	NUMBER NORMAL	NUMBER ABNORMAL	DATE	TECHNICIAN	COMMENTS
	value	units							
Comp C-U / .	1 %			1	290	10	1/19/09	UR	
				2	258	12	↓	↓	
				3	317	10			
				4	300	11			
				5	262	8			
Comp C-U / .	10 %			1	260	9	↓	↓	
				2	283	4			
				3	293	8			
				4	311	7			
				5	265	8			
Comp C-U / .	50 %			1	263	12	1/20/09	UR	
				2	241	8	↓	↓	
				3	276	8			
				4	302	6			
				5	281	8			
Comp C-U / .	100 %			1	298	8	↓	↓	
				2	296	7			
				3	313	17			
				4	284	5			
				5	300	6			

BIVALVE LARVAL DEVELOPMENTAL SUSPENDED PARTICULATE PHASE ENDPOINT DATA SHEET



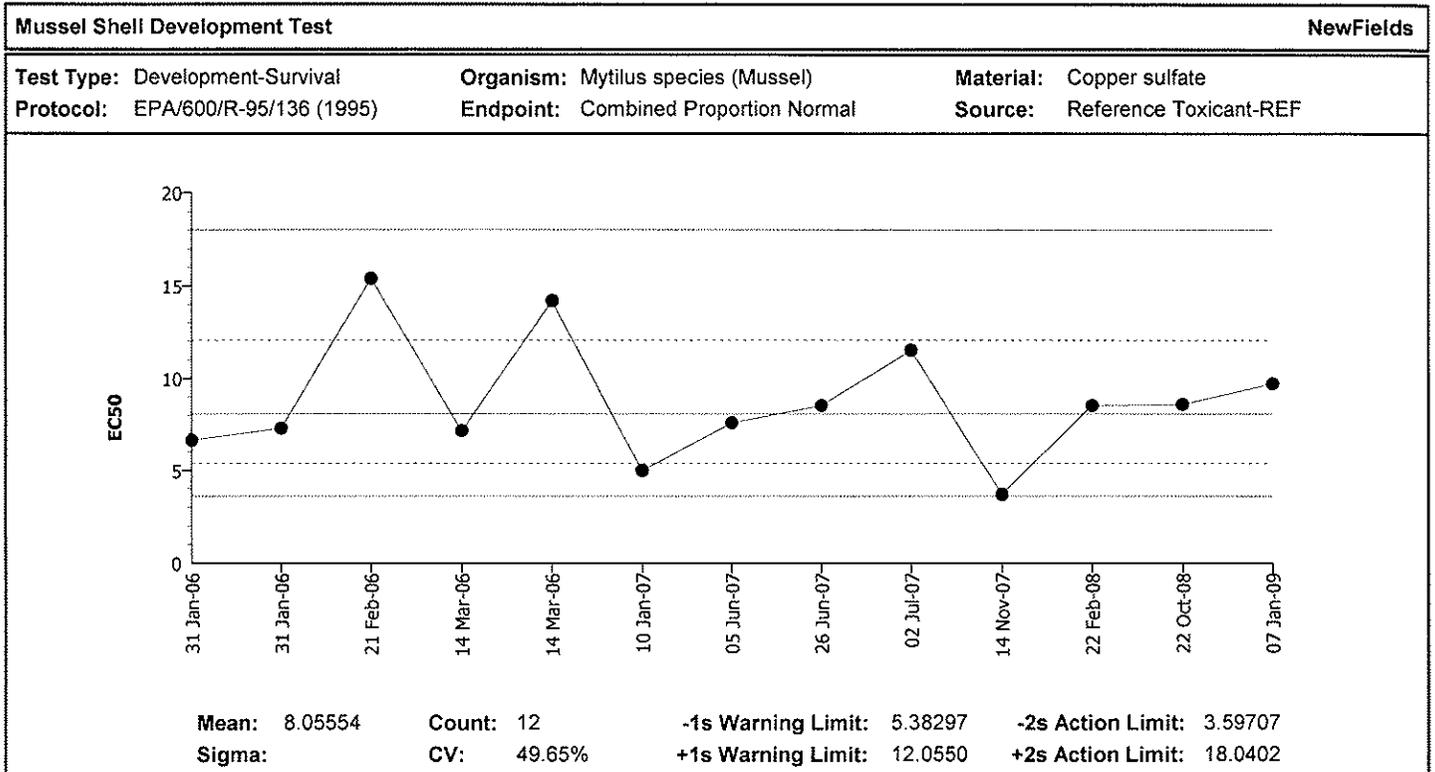
SPECIES
Mytilus edulis (mussel)

CLIENT City of Newport	PROJECT Marina Park	NEWFIELDS JOB NUM 1105-005-860	PROJECT MANAGER Bill Gardiner	NEWFIELDS LABORATORY Port Gamble Incubator	PROTOCOL USEPA/USACE 1998, Region 4
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LARVAL OBSERVATION DATA

CLIENT/ NEWFIELDS ID	CONCENTRATION		VIAL NUMBER	REP	NUMBER NORMAL	NUMBER ABNORMAL	DATE	TECHNICIAN	COMMENTS
	value	units							
Comp C-L / .	1 %			1	283	5	① 1/19/09 1/20/09	CR	
				2	276	5			
				3	291	7			
				4	233	7			
				5	279	5			
Comp C-L / .	10 %			1	255	7	↓	↓	
				2	281	8			
				3	324	9			
				4	261	4			
				5	264	11			
Comp C-L / .	50 %			1	253	4	↓	↓	
				2	262	11			
				3	296	9			
				4	277	7			
				5	290	8			
Comp C-L / .	100 %			1	247	7	↓	↓	
				2	268 304	8 5			
				3	293	8			
				4	299	9			
				5	306	5			

① we CR 1/19/09
② Wrong date CR 1/19/09



Quality Control Data										
Point	Year	Month	Day	Data	Delta	Sigma	Warning	Action	Test Link	Analysis
1	2006	Jan	31	6.61806	-1.43748	-0.48759			13-7720-1086	09-0953-9971
2			31	7.27814	-0.77740	-0.25175			07-7532-7374	03-9619-0590
3		Feb	21	15.39971	7.34417	1.60743	(+)		13-4991-4803	05-4083-6897
4		Mar	14	7.14387	-0.91168	-0.29794			06-2606-4386	01-1874-9985
5			14	14.18912	6.13358	1.40433	(+)		04-5028-3346	02-3972-6078
6	2007	Jan	10	4.98039	-3.07516	-1.19283	(-)		14-3905-0090	14-8759-6838
7		Jun	5	7.58039	-0.47515	-0.15081			13-7829-5492	02-0555-4940
8			26	8.51244	0.45690	0.13685			01-3435-1614	10-7297-9254
9		Jul	2	11.50108	3.44554	0.88331			05-4911-0140	15-1586-2946
10		Nov	14	3.68371	-4.37184	-1.94096	(-)		15-3555-7493	15-2027-0867
11	2008	Feb	22	8.50255	0.44700	0.13397			06-6162-8975	04-4740-6893
12		Oct	22	8.57836	0.52281	0.15599			13-5164-0440	13-1167-6043
13	2009	Jan	7	9.69234	1.63680	0.45886			10-8012-7714	12-5942-1542

CETIS Analysis Detail

Mussel Shell Development Test **NewFields**

Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Combined Proportion Normal	Comparison	10-8012-7714	10-8012-7714	26 Jan-09 1:04 PM	CETISv1.1.2

Method	Alt H	Data Transform	Zeta	NOEL	LOEL	Toxic Units	ChV	PMSD
Dunnett's Multiple Comparison	C > T	Angular (Corrected)		5	10	20	7.07107	8.11%

Group Comparisons							
Control	vs	Conc-µg/L	Statistic	Critical	P-Value	MSD	Decision(0.05)
Dilution Water		2.5	-2.2604	2.41651	0.9970	0.14073	Non-Significant Effect
		5	-0.1888	2.41651	0.8114	0.14073	Non-Significant Effect
		10	10.1928	2.41651	0.0000	0.14073	Significant Effect

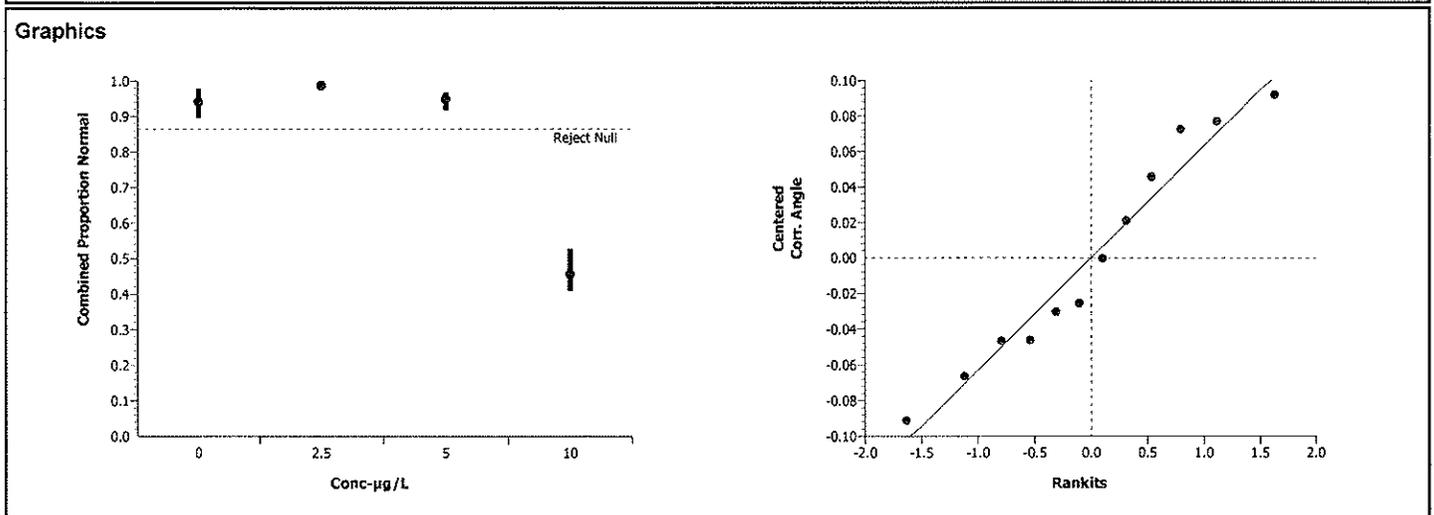
Test Acceptability				
Attribute	Statistic	TAC Range	Overlap	Decision
PMSD	0.08106	NL - 0.25	No	Passes acceptability criteria

ANOVA Table						
Source	Sum of Squares	Mean Square	DF	F Statistic	P-Value	Decision(0.05)
Between	0.9569461	0.318982	3	62.70	0.00001	Significant Effect
Error	0.0407007	0.0050876	8			
Total	0.99764680	0.3240696	11			

ANOVA Assumptions					
Attribute	Test	Statistic	Critical	P-Value	Decision(0.01)
Variances	Bartlett	0.40782	11.34487	0.93862	Equal Variances
Distribution	Shapiro-Wilk W	0.94237		0.52940	Normal Distribution

Data Summary		Original Data					Transformed Data			
Conc-µg/L	Control Type	Count	Mean	Minimum	Maximum	SD	Mean	Minimum	Maximum	SD
0	Dilution Water	3	0.93950	0.89547	0.97879	0.04186	1.33288	1.24157	1.42463	0.09153
2.5		3	0.98611	0.97690	1.00000	0.01224	1.46452	1.41821	1.54128	0.06694
5		3	0.94733	0.91638	0.96743	0.02720	1.34387	1.27743	1.38932	0.05883
10		3	0.45412	0.40767	0.52613	0.06323	0.73927	0.69253	0.81154	0.06348

Data Detail											
Conc-µg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Dilution Water	0.89547	0.97879	0.94425							
2.5		1.00000	0.98142	0.97690							
5		0.96743	0.95819	0.91638							
10		0.42857	0.40767	0.52613							



CETIS Analysis Detail

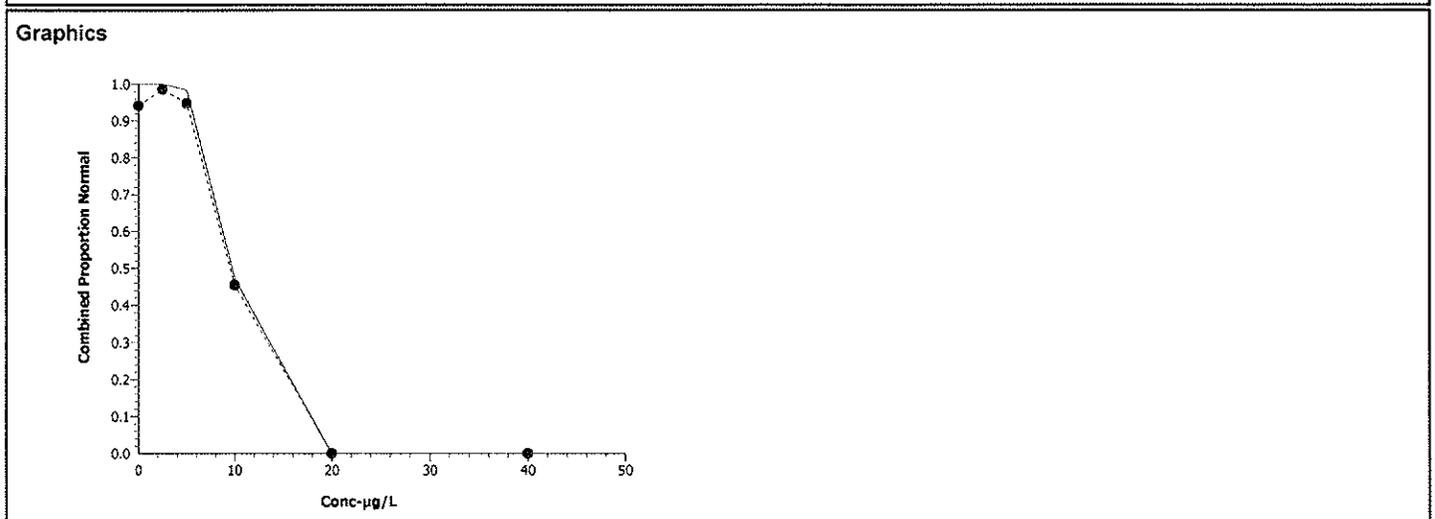
Spearman-Karber: Page 1 of 1
 Report Date: 26 Jan-09 1:04 PM
 Analysis: 12-5942-1542

Mussel Shell Development Test					NewFields
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Endpoint	Analysis Type	Sample Link	Control Link	Date Analyzed	Version
Combined Proportion Normal	Trimmed Spearman-Karber	10-8012-7714	10-8012-7714	26 Jan-09 1:04 PM	CETISv1.1.2

Spearman-Karber Options					Point Estimates		
Threshold Option	Lower Threshold	Trim	Mu	Sigma	EC50/LC50	95% LCL	95% UCL
Control Threshold	0.05862832	0.00%	0.9864288	0.005280371	9.69234	9.45950	9.93092

Data Summary		Calculated Variate(A/B)							
Conc-µg/L	Control Type	Count	Mean	Minimum	Maximum	SE	SD	A	B
0	Dilution Water	3	0.93950	0.89547	0.97879	0.00854	0.04186	851	904
2.5		3	0.98611	0.97690	1.00000	0.00250	0.01224	900	913
5		3	0.94733	0.91638	0.96743	0.00555	0.02720	835	881
10		3	0.45412	0.40767	0.52613	0.01291	0.06323	391	861
20		3	0.00000	0.00000	0.00000	0.00000	0.00000	0	861
40		3	0.00000	0.00000	0.00000	0.00000	0.00000	0	861



CETIS Data Worksheet

Mussel Shell Development Test	NewFields
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Start Date: 07 Jan-09 06:00 PM	Species: Mytilus species	Sample Code: 1512131168
Ending Date: 09 Jan-09 06:00 PM	Protocol: EPA/600/R-95/136 (1995)	Sample Source: Reference Toxicant
Sample Date: 07 Jan-09 06:00 PM	Material: Copper sulfate	Sample Station: P070930.96

Conc-µg/L	Code	Rep	Pos	Initial Density	Final Density	# Counted	# Normal	Notes
0	D	1	15	287	264	264	257	
0	D	2	9	287	330	330	323	
0	D	3	2	287	275	275	271	
2.5		1	4	287	292	292	287	
2.5		2	13	287	323	323	317	
2.5		3	7	287	303	303	296	
5		1	16	287	307	307	297	
5		2	18	287	284	284	275	
5		3	12	287	273	273	263	
10		1	10	287	278	278	123	
10		2	6	287	311	311	117	
10		3	11	287	285	285	151	
20		1	14	287	298	298	0	
20		2	17	287	255	255	0	
20		3	8	287	295	295	0	
40		1	1	287	25	25	0	
40		2	5	287	31	31	0	
40		3	3	287	27	27	0	

**ARVAL DEVELOPMENTAL SUSPENDED PARTICULATE PHASE TEST
COPPER REFERENCE TOXICANT WQ**



CLIENT City of Newport	PROJECT Marina Park	SPECIES <i>Mytilus edulis (musse)</i>	NEWFIELDS LABORATORY Incubator	PROTOCOL USEPA/USACE 1996, Region 4 RIM 1993
NEWFIELDS JOB NUMBER 1105-005-860	PROJECT MANAGER Port Gamble	QUANTITY OF STOCK TARGET: 0.039 mL	QUANTITY OF DILUENT: 500mL	INIT
Test ID P070930.96	LOT #: 1704237	ACTUAL: 0.03924 mL	ACTUAL: 1800	DATE PREP TIME 1800
	TEST START DATE: 07Jan09		TEST END DATE 09Jan09	

WATER QUALITY DATA

DILUTIN.WAT.BATCH	TEMP REC#	REFERENCE TOX. MATERIAL		REFERENCE TOXICANT								
		na	Copper Sulfate	copper								
TEST CONDITIONS												
CLIENT/ NEWFIELDS ID	CONCENTRATION value	DAY	REP	D.O.		TEMP. °C	SALINITY		pH	WQ TECH		
				mg/L	meter		meter	ppt			meter	unit
Ref.Tox.-Copper	0 mg/L	0	Stock	4	7.8	16.2	1	32	1	7.7	BH	
		1	Stock	3	7.2	16.7	3	31	3	7.2	TS	
		2	Stock	3	7.2	16.4	3	31	3	7.5	TS	
		3	Stock									
		4	Stock									
Ref.Tox.-Copper	2.5 mg/L	0	Stock	4	8.0	16.1	1	31	1	7.7	BH	
		1	Stock	3	7.1	16.6	3	32	3	7.5	TS	
		2	Stock	3	7.1	16.4	3	32	3	7.7	TS	
		3	Stock									
		4	Stock									
Ref.Tox.-Copper	5 mg/L	0	Stock	4	8.0	16.1	1	32	1	7.7	BH	
		1	Stock	3	7.1	16.6	3	32	3	7.7	TS	
		2	Stock	3	7.1	16.4	3	32	3	7.8	TS	
		3	Stock									
		4	Stock									

**LARVAL DEVELOPMENTAL SUSPENDED PARTICULATE PHASE TEST
COPPER REFERENCE TOXICANT WQ**



CLIENT City of Newport	PROJECT Marina Park	SPECIES <i>Mytilus edulis (musssel)</i>	NEWFIELDS LABORATORY Incubator	PROTOCOL USEPA/USACE 1998, Region 4 RIM 1993
NEWFIELDS JOB NUMBER 1105-005-860	PROJECT MANAGER Port Gamble	QUANTITY OF STOCK TARGET: 0.039 mL	QUANTITY OF DILUENT: 500mL	INIT
Test ID	LOT #:	ACTUAL:	ACTUAL:	DATE PREP
		TEST START DATE: 07Jan09	TEST END DATE: 09Jan09	TIME
			TIME: 1800	

WATER QUALITY DATA

DILTIN.WAT.BATCH	TEMP REC#	REFERENCE TOX. MATERIAL		REFERENCE TOXICANT									
		na	Copper Sulfate	copper									
CLIENT/NEWFIELDS ID	CONCENTRATION value	DAY	REP	TEST CONDITIONS		TECHNICIAN							
				DO (mg/L)	TEMP(C)								
				meter	meter								
				mg/L	°C								
				meter	meter								
				mg/L	ppt								
				meter	meter								
				mg/L	unit								
Ref.Tox.-Copper	10 mg/L	0	Stock	4	8.0	4	16.1	1	32	1	7.8	BH	
		1	Stock	3	7.1	3	16.6	3	32	3	7.7	TS	
		2	Stock	3	7.1	3	16.4	3	32	3	7.8	TS	
		3	Stock										
		4	Stock										
Ref.Tox.-Copper	20 mg/L	0	Stock	4	8.0	4	16.0	1	32	1	7.8	BH	
		1	Stock	3	7.1	3	16.6	3	32	3	7.8	TS	
		2	Stock	3	7.1	3	16.4	3	32	3	7.9	TS	
		3	Stock										
		4	Stock										
Ref.Tox.-Copper	40 mg/L	0	Stock	4	8.0	4	15.9	1	32	1	7.8	BH	
		1	Stock	3	7.1	3	16.5	3	32	3	7.8	TS	
		2	Stock	3	7.0	3	16.4	3	32	3	7.9	TS	
		3	Stock										
		4	Stock										

LARVAL DEVELOPMENTAL SUSPENDED PARTICULATE PHASE TEST COPPER REFERENCE TOXICANT ENDPOINT DATA SHEET



P070930.96

SPECIES
Mytilus edulis (mussel)

CLIENT City of Newport	PROJECT Marina Park	NEWFIELDS JOB NUM 1105-005-860	PROJECT MANAGER Bill Gardiner	NEWFIELDS LABORATORY Port Gamble Incubator	PROTOCOL USEPA/USACE 1998, Region
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LARVAL OBSERVATION DATA

CLIENT/ MEC ID	CONCENTRATION		VIAL NUMBER	REP	NUMBER NORMAL	NUMBER ABNORMAL	DATE	TECHNICIAN	COMMENTS
	value	units							
Ref.Tox.-Copper	0	µg/L		1	257	7	1/19/09	CR	
				2	323	7			
				3	271	4			
Ref.Tox.-Copper	2.5	µg/L		1	287	5	↓	↓	
				2	317	6			
				3	296	7			
Ref.Tox.-Copper	5	µg/L		1	297	10	↓	↓	
				2	275	9			
				3	263	10			
Ref.Tox.-Copper	10	µg/L		1	123	155	↓	↓	
				2	117	194			
				3	151	134			
Ref.Tox.-Copper	20	µg/L		1	0	298	↓	↓	
				2	0	255			
				3	0	295			
Ref.Tox.-Copper	40	µg/L		1	0	25	↓	↓	
				2	0	31			
				3	0	27			
Ref.Tox.-Copper	Stocking Density			1	X	295	1/20/09	CR	
				2	X	289	↓	↓	
				3	X	277	↓	↓	



ORGANISM RECEIPT LOG

Date: 1/6/08		Time: 1430		NewFields Batch No. CA 3121	
Organism: Mytilus sp.			Source: Carlsbad Aquafarms		
Address: On File				Invoice Attached <input checked="" type="radio"/> Yes <input type="radio"/> No	
Phone: On File			Contact: John Davis		
No. Ordered: 1 batch		No. Received: 1 batch		Source Batch: Field	
Condition of Organisms: Good			Approximate Size or Age: Adult		
Shipper: FedEx			B of L (Tracking No.): 7962 2961 3121		
Condition of Container: Good			Received By: BH		
Confirmation of ID of Organism: Yes <input type="radio"/> No <input checked="" type="radio"/>				Technician (Initials): BH	
Notes:					
pH (Units)	Temp. (°C)	D.O. (mg/L)	Conductivity or Salinity (Include Units)	Technician (Initials)	
*				BH	
Notes: * shipped dry					

Appendix E
Bioaccumulation Tests
Data Sheets and Supporting Information

LIPIDS ANALYSIS DATA SHEET
Percent Lipids by Method Bligh&Dyer



Data Release Authorized: *[Signature]*
Reported: 01/22/09
Date Received: 01/16/09
Page 1 of 2

QC Report No: OI73-Newfields Northwest
Project: Marina Park

Client/ ARI ID	Date Sampled	Matrix	Analysis Date	RL	Result
Mn ZERO TIME OI73A 09-1988	12/16/08	Tissue	01/20/09	0.0010	0.480 %
Mn ZERO TIME REP.2 OI73B 09-1989	12/16/08	Tissue	01/20/09	0.0010	0.449 %
Mn ZERO TIME REP.3 OI73C 09-1990	12/16/08	Tissue	01/20/09	0.0010	0.450 %
NC BACKGROUND OI73D 09-1991	12/19/08	Tissue	01/20/09	0.0010	0.819 %
Mn LA-3 REF. REP.1 OI73E 09-1992	01/14/09	Tissue	01/20/09	0.0010	0.369 %
Mn LA-3 REF. REP.2 OI73F 09-1993	01/14/09	Tissue	01/20/09	0.0010	0.398 %
Mn LA-3 REF. REP.3 OI73G 09-1994	01/14/09	Tissue	01/20/09	0.0010	0.339 %
Mn LA-3 REF. REP.4 OI73H 09-1995	01/14/09	Tissue	01/20/09	0.0010	0.339 %
Mn LA-3 REF. REP.5 OI73I 09-1996	01/14/09	Tissue	01/20/09	0.0010	0.369 %
Mn COMP.C.L REP.1 OI73J 09-1997	01/14/09	Tissue	01/20/09	0.0010	0.400 %
Mn COMP.C.L REP.2 OI73K 09-1998	01/14/09	Tissue	01/20/09	0.0010	0.350 %
Mn COMP.C.L REP.3 OI73L 09-1999	01/14/09	Tissue	01/20/09	0.0010	0.380 %
Mn COMP.C.L REP.4 OI73M 09-2000	01/14/09	Tissue	01/20/09	0.0010	0.429 %
Mn COMP.C.L REP.5 OI73N 09-2001	01/14/09	Tissue	01/20/09	0.0010	0.459 %
Mn COMP.C.U REP.1 OI73O 09-2002	01/14/09	Tissue	01/20/09	0.0010	0.320 %

LIPIDS ANALYSIS DATA SHEET
Percent Lipids by Method Bligh&Dyer



Data Release Authorized: *AB*
Reported: 01/22/09
Date Received: 01/16/09
Page 2 of 2

QC Report No: OI73-Newfields Northwest
Project: Marina Park

Client/ ARI ID	Date Sampled	Matrix	Analysis Date	RL	Result
Mn COMP.C.U REP.2 OI73P 09-2003	01/14/09	Tissue	01/20/09	0.0010	0.328 %
Mn COMP.C.U REP.3 OI73Q 09-2004	01/14/09	Tissue	01/20/09	0.0010	0.390 %
Mn COMP.C.U REP.4 OI73R 09-2005	01/14/09	Tissue	01/20/09	0.0010	0.410 %
Mn COMP.C.U REP.5 OI73S 09-2006	01/14/09	Tissue	01/20/09	0.0010	0.408 %
NC LA-3 REF. REP.1 OI73T 09-2007	01/14/09	Tissue	01/20/09	0.0010	0.759 %
Method Blank			01/20/09	0.0010	< 0.0010 % U
Mn LA-3 REF. REP.4 DUP OI73HDUP 09-1995	01/14/09	Tissue	01/20/09	0.0010	0.279 % RPD: 19.4 %

Results Are On A Wet Weight Basis

RL-Analytical reporting limit
U-Undetected at reported detection limit

LIPIDS ANALYSIS DATA SHEET
Percent Lipids by Method Bligh&Dyer



Data Release Authorized: *AS*
Reported: 01/22/09
Date Received: 01/16/09
Page 1 of 2

QC Report No: OI77-Newfields Northwest
Project: MARINA PARK

Client/ ARI ID	Date Sampled	Matrix	Analysis Date	RL	Result
NC LA.3 DEF REP.2 OI77A 09-2015	01/14/09	Tissue	01/20/09	0.0020	0.876 %
NC LA.3 DEF REP.3 OI77B 09-2016	01/14/09	Tissue	01/20/09	0.0020	0.873 %
NC LA.3 DEF REP.4 OI77C 09-2017	01/14/09	Tissue	01/20/09	0.0020	0.911 %
NC LA.3 DEF REP.5 OI77D 09-2018	01/14/09	Tissue	01/20/09	0.0020	0.857 %
NC COMP.C.L REP.1 OI77E 09-2019	01/14/09	Tissue	01/20/09	0.0020	0.812 %
NC COMP.C.L REP.2 OI77F 09-2020	01/14/09	Tissue	01/20/09	0.0020	0.893 %
NC COMP.C.L REP.3 OI77G 09-2021	01/14/09	Tissue	01/20/09	0.0020	0.940 %
NC COMP.C.L REP.4 OI77H 09-2022	01/14/09	Tissue	01/20/09	0.0020	0.898 %
NC COMP.C.L REP.5 OI77I 09-2023	01/14/09	Tissue	01/20/09	0.0020	0.871 %
NC COMP.C.U REP.1 OI77J 09-2024	01/14/09	Tissue	01/20/09	0.0020	0.972 %
NC COMP.C.U REP.2 OI77K 09-2025	01/14/09	Tissue	01/20/09	0.0020	0.812 %
NC COMP.C.U REP.3 OI77L 09-2026	01/14/09	Tissue	01/20/09	0.0020	0.900 %
NC COMP.C.U REP.4 OI77M 09-2027	01/14/09	Tissue	01/20/09	0.0020	0.838 %

LIPIDS ANALYSIS DATA SHEET
Percent Lipids by Method Bligh&Dyer



Data Release Authorized: *AB*
Reported: 01/22/09
Date Received: 01/16/09
Page 2 of 2

QC Report No: OI77-Newfields Northwest
Project: MARINA PARK

Client/ ARI ID	Date Sampled	Matrix	Analysis Date	RL	Result
NC COMP.C.U REP.5 OI77N 09-2028	01/14/09	Tissue	01/20/09	0.0020	1.08 %
Method Blank			01/20/09	0.0020	< 0.0020 % U
NC COMP.C.L REP.4 DUP OI77HDUP 09-2022	01/14/09	Tissue	01/20/09	0.0020	0.931 % RPD: 3.6 %

Results Are On A Wet Weight Basis

RL-Analytical reporting limit
U-Undetected at reported detection limit



INORGANICS ANALYSIS DATA SHEET

TOTAL METALS

Page 1 of 1

Sample ID: Mn ZERO TIME
SAMPLE

Lab Sample ID: OI73A

LIMS ID: 09-1988

Matrix: Tissue

Data Release Authorized: 

Reported: 01/23/09

QC Report No: OI73-Newfields Northwest

Project: Marina Park

Date Sampled: 12/16/08

Date Received: 01/16/09

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-as-rec Q	
CLP-M	01/20/09	7471A	01/22/09	7439-97-6	Mercury	0.01	0.01	U

U-Analyte undetected at given RL

RL-Reporting Limit



INORGANICS ANALYSIS DATA SHEET

TOTAL METALS

Page 1 of 1

Sample ID: Mn ZERO TIME REP.2
SAMPLE

Lab Sample ID: OI73B

QC Report No: OI73-Newfields Northwest

LIMS ID: 09-1989

Project: Marina Park

Matrix: Tissue

Data Release Authorized: *[Signature]*

Date Sampled: 12/16/08

Reported: 01/23/09

Date Received: 01/16/09

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-as-rec Q
CLP-M	01/20/09	7471A	01/22/09	7439-97-6	Mercury	0.01	0.01 U

U-Analyte undetected at given RL

RL-Reporting Limit

INORGANICS ANALYSIS DATA SHEET

TOTAL METALS

Page 1 of 1

Sample ID: Mn ZERO TIME REP.3
SAMPLE

Lab Sample ID: OI73C

QC Report No: OI73-Newfields Northwest

LIMS ID: 09-1990

Project: Marina Park

Matrix: Tissue

Data Release Authorized: 

Date Sampled: 12/16/08

Reported: 01/23/09

Date Received: 01/16/09

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-as-rec Q	
CLP-M	01/20/09	7471A	01/22/09	7439-97-6	Mercury	0.009	0.009	U

U-Analyte undetected at given RL

RL-Reporting Limit



INORGANICS ANALYSIS DATA SHEET

TOTAL METALS

Page 1 of 1

Sample ID: NC BACKGROUND
SAMPLE

Lab Sample ID: OI73D

QC Report No: OI73-Newfields Northwest

LIMS ID: 09-1991

Project: Marina Park

Matrix: Tissue

Data Release Authorized

Date Sampled: 12/19/08

Reported: 01/23/09

Date Received: 01/16/09

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-as-rec Q
CLP-M	01/20/09	7471A	01/22/09	7439-97-6	Mercury	0.009	0.010

U-Analyte undetected at given RL

RL-Reporting Limit

INORGANICS ANALYSIS DATA SHEET

TOTAL METALS

Page 1 of 1

Sample ID: Mn LA-3 REF. REP.1
SAMPLE

Lab Sample ID: OI73E

QC Report No: OI73-Newfields Northwest

LIMS ID: 09-1992

Project: Marina Park

Matrix: Tissue

Data Release Authorized: 

Date Sampled: 01/14/09

Reported: 01/23/09

Date Received: 01/16/09

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-as-rec Q	
CLP-M	01/20/09	7471A	01/22/09	7439-97-6	Mercury	0.01	0.01	U

U-Analyte undetected at given RL

RL-Reporting Limit



INORGANICS ANALYSIS DATA SHEET

TOTAL METALS

Page 1 of 1

Sample ID: Mn LA-3 REF. REP.2
SAMPLE

Lab Sample ID: OI73F

LIMS ID: 09-1993

Matrix: Tissue

Data Release Authorized:

Reported: 01/23/09

QC Report No: OI73-Newfields Northwest

Project: Marina Park

Date Sampled: 01/14/09

Date Received: 01/16/09

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-as-rec Q
CLP-M	01/20/09	7471A	01/22/09	7439-97-6	Mercury	0.009	0.009 U

U-Analyte undetected at given RL

RL-Reporting Limit

INORGANICS ANALYSIS DATA SHEET

TOTAL METALS

Page 1 of 1

Sample ID: Mn LA-3 REF. REP.3
SAMPLE

Lab Sample ID: OI73G

LIMS ID: 09-1994

Matrix: Tissue

Data Release Authorized: 

Reported: 01/23/09

QC Report No: OI73-Newfields Northwest

Project: Marina Park

Date Sampled: 01/14/09

Date Received: 01/16/09

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-as-rec Q	
CLP-M	01/20/09	7471A	01/22/09	7439-97-6	Mercury	0.009	0.009	U

U-Analyte undetected at given RL

RL-Reporting Limit

INORGANICS ANALYSIS DATA SHEET

TOTAL METALS
Page 1 of 1

Sample ID: Mn LA-3 REF. REP.4
SAMPLE

Lab Sample ID: OI73H

LIMS ID: 09-1995

Matrix: Tissue

Data Release Authorized: 

Reported: 01/23/09

QC Report No: OI73-Newfields Northwest

Project: Marina Park

Date Sampled: 01/14/09

Date Received: 01/16/09

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-as-rec Q	
CLP-M	01/20/09	7471A	01/22/09	7439-97-6	Mercury	0.01	0.01	U

U-Analyte undetected at given RL
RL-Reporting Limit

INORGANICS ANALYSIS DATA SHEET

TOTAL METALS

Page 1 of 1

Sample ID: Mn LA-3 REF. REP.5
SAMPLE

Lab Sample ID: OI73I

LIMS ID: 09-1996

Matrix: Tissue

Data Release Authorized: 

Reported: 01/23/09

QC Report No: OI73-Newfields Northwest

Project: Marina Park

Date Sampled: 01/14/09

Date Received: 01/16/09

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-as-rec Q	
CLP-M	01/20/09	7471A	01/22/09	7439-97-6	Mercury	0.01	0.01	U

U-Analyte undetected at given RL

RL-Reporting Limit



INORGANICS ANALYSIS DATA SHEET

TOTAL METALS
Page 1 of 1

Sample ID: Mn COMP.C.L REP.1
SAMPLE

Lab Sample ID: OI73J

QC Report No: OI73-Newfields Northwest

LIMS ID: 09-1997

Project: Marina Park

Matrix: Tissue

Data Release Authorized: *[Signature]*

Date Sampled: 01/14/09

Reported: 01/23/09

Date Received: 01/16/09

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-as-rec Q	
CLP-M	01/20/09	7471A	01/22/09	7439-97-6	Mercury	0.009	0.009	U

U-Analyte undetected at given RL
RL-Reporting Limit

INORGANICS ANALYSIS DATA SHEET

TOTAL METALS

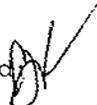
Page 1 of 1

Sample ID: Mn COMP.C.L REP.2
SAMPLE

Lab Sample ID: OI73K

LIMS ID: 09-1998

Matrix: Tissue

Data Release Authorized 

Reported: 01/23/09

QC Report No: OI73-Newfields Northwest

Project: Marina Park

Date Sampled: 01/14/09

Date Received: 01/16/09

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-as-rec Q	
CLP-M	01/20/09	7471A	01/22/09	7439-97-6	Mercury	0.009	0.009	U

U-Analyte undetected at given RL
RL-Reporting Limit

INORGANICS ANALYSIS DATA SHEET

TOTAL METALS

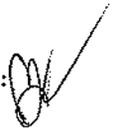
Page 1 of 1

Sample ID: Mn COMP.C.L REP.3
SAMPLE

Lab Sample ID: OI73L

LIMS ID: 09-1999

Matrix: Tissue

Data Release Authorized: 

Reported: 01/23/09

QC Report No: OI73-Newfields Northwest

Project: Marina Park

Date Sampled: 01/14/09

Date Received: 01/16/09

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-as-rec Q	
CLP-M	01/20/09	7471A	01/22/09	7439-97-6	Mercury	0.01	0.01	U

U-Analyte undetected at given RL

RL-Reporting Limit

INORGANICS ANALYSIS DATA SHEET

TOTAL METALS

Page 1 of 1

Sample ID: Mn COMP.C.L REP.4
SAMPLE

Lab Sample ID: OI73M

LIMS ID: 09-2000

Matrix: Tissue

Data Release Authorized: 

Reported: 01/23/09

QC Report No: OI73-Newfields Northwest

Project: Marina Park

Date Sampled: 01/14/09

Date Received: 01/16/09

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-as-rec Q	
CLP-M	01/20/09	7471A	01/22/09	7439-97-6	Mercury	0.009	0.009	U

U-Analyte undetected at given RL
RL-Reporting Limit



INORGANICS ANALYSIS DATA SHEET

TOTAL METALS

Page 1 of 1

Sample ID: Mn COMP.C.L REP.5
SAMPLE

Lab Sample ID: OI73N

QC Report No: OI73-Newfields Northwest

LIMS ID: 09-2001

Project: Marina Park

Matrix: Tissue

Data Release Authorized: 

Date Sampled: 01/14/09

Reported: 01/23/09

Date Received: 01/16/09

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-as-rec Q
CLP-M	01/20/09	7471A	01/22/09	7439-97-6	Mercury	0.01	0.01 U

U-Analyte undetected at given RL

RL-Reporting Limit

INORGANICS ANALYSIS DATA SHEET

TOTAL METALS

Page 1 of 1

Sample ID: Mn COMP.C.U REP.1
SAMPLE

Lab Sample ID: OI730

LIMS ID: 09-2002

Matrix: Tissue

Data Release Authorized 

Reported: 01/23/09

QC Report No: OI73-Newfields Northwest

Project: Marina Park

Date Sampled: 01/14/09

Date Received: 01/16/09

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-as-rec Q
CLP-M	01/20/09	7471A	01/22/09	7439-97-6	Mercury	0.009	0.011

U-Analyte undetected at given RL

RL-Reporting Limit

INORGANICS ANALYSIS DATA SHEET

TOTAL METALS

Page 1 of 1

Sample ID: Mn COMP.C.U REP.1
DUPLICATE

Lab Sample ID: GI730

QC Report No: OI73-Newfields Northwest

LIMS ID: 09-2002

Project: Marina Park

Matrix: Tissue

Data Release Authorized: 

Date Sampled: 01/14/09

Reported: 01/23/09

Date Received: 01/16/09

MATRIX DUPLICATE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample	Duplicate	RPD	Control Limit	Q
Mercury	7471A	0.011	0.011	0.0%	+/- 0.009	L

Reported in mg/kg-as-rec

*-Control Limit Not Met

L-RPD Invalid, Limit = Detection Limit



INORGANICS ANALYSIS DATA SHEET

TOTAL METALS

Page 1 of 1

Sample ID: Mn COMP.C.U REP.1
MATRIX SPIKE

Lab Sample ID: OI730

QC Report No: OI73-Newfields Northwest

LIMS ID: 09-2002

Project: Marina Park

Matrix: Tissue

Data Release Authorized: 

Date Sampled: 01/14/09

Reported: 01/23/09

Date Received: 01/16/09

MATRIX SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample	Spike	Spike Added	% Recovery	Q
Mercury	7471A	0.011	0.100	0.0931	95.6%	

Reported in mg/kg-as-rec

N-Control Limit Not Met

H-% Recovery Not Applicable, Sample Concentration Too High

NA-Not Applicable, Analyte Not Spiked

Percent Recovery Limits: 75-125%

INORGANICS ANALYSIS DATA SHEET

TOTAL METALS

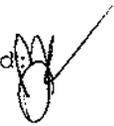
Page 1 of 1

Sample ID: Mn COMP.C.U REP.2
SAMPLE

Lab Sample ID: OI73P

LIMS ID: 09-2003

Matrix: Tissue

Data Release Authorized: 

Reported: 01/23/09

QC Report No: OI73-Newfields Northwest

Project: Marina Park

Date Sampled: 01/14/09

Date Received: 01/16/09

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-as-rec Q
CLP-M	01/20/09	7471A	01/22/09	7439-97-6	Mercury	0.009	0.013

U-Analyte undetected at given RL

RL-Reporting Limit

INORGANICS ANALYSIS DATA SHEET

TOTAL METALS

Page 1 of 1

Sample ID: Mn COMP.C.U REP.3
SAMPLE

Lab Sample ID: OI73Q

LIMS ID: 09-2004

Matrix: Tissue

Data Release Authorized 

Reported: 01/23/09

QC Report No: OI73-Newfields Northwest

Project: Marina Park

Date Sampled: 01/14/09

Date Received: 01/16/09

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-as-rec Q
CLP-M	01/20/09	7471A	01/22/09	7439-97-6	Mercury	0.009	0.011

U-Analyte undetected at given RL
RL-Reporting Limit

INORGANICS ANALYSIS DATA SHEET

TOTAL METALS

Page 1 of 1

Sample ID: Mn COMP.C.U REP.4
SAMPLE

Lab Sample ID: OI73R

LIMS ID: 09-2005

Matrix: Tissue

Data Release Authorized: 

Reported: 01/23/09

QC Report No: OI73-Newfields Northwest

Project: Marina Park

Date Sampled: 01/14/09

Date Received: 01/16/09

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-as-rec Q
CLP-M	01/20/09	7471A	01/22/09	7439-97-6	Mercury	0.009	0.011

U-Analyte undetected at given RL

RL-Reporting Limit

INORGANICS ANALYSIS DATA SHEET

TOTAL METALS

Page 1 of 1

Sample ID: Mn COMP.C.U REP.5
SAMPLE

Lab Sample ID: OI73S

LIMS ID: 09-2006

Matrix: Tissue

Data Release Authorized 

Reported: 01/23/09

QC Report No: OI73-Newfields Northwest

Project: Marina Park

Date Sampled: 01/14/09

Date Received: 01/16/09

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-as-rec Q
CLP-M	01/20/09	7471A	01/22/09	7439-97-6	Mercury	0.01	0.01

U-Analyte undetected at given RL

RL-Reporting Limit

INORGANICS ANALYSIS DATA SHEET

TOTAL METALS

Page 1 of 1

Sample ID: NC LA-3 REF. REP.1
SAMPLE

Lab Sample ID: OI73T

QC Report No: OI73-Newfields Northwest

LIMS ID: 09-2007

Project: Marina Park

Matrix: Tissue

Data Release Authorized: 

Date Sampled: 01/14/09

Reported: 01/23/09

Date Received: 01/16/09

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-as-rec Q	
CLP-M	01/20/09	7471A	01/22/09	7439-97-6	Mercury	0.01	0.01	U

U-Analyte undetected at given RL

RL-Reporting Limit

INORGANICS ANALYSIS DATA SHEET

TOTAL METALS

Page 1 of 1

Sample ID: LAB CONTROL

Lab Sample ID: OI73LCS

LIMS ID: 09-1988

Matrix: Tissue

Data Release Authorized: 

Reported: 01/23/09

QC Report No: OI73-Newfields Northwest

Project: Marina Park

Date Sampled: NA

Date Received: NA

BLANK SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Spike Found	Spike Added	% Recovery	Q
Mercury	7471A	0.21	0.20	105%	

Reported in mg/kg-wet

N-Control limit not met

NA-Not Applicable, Analyte Not Spiked

Control Limits: 80-120%

INORGANICS ANALYSIS DATA SHEET

TOTAL METALS

Sample ID: METHOD BLANK

Page 1 of 1

Lab Sample ID: OI73MB

QC Report No: OI73-Newfields Northwest

LIMS ID: 09-1988

Project: Marina Park

Matrix: Tissue

Data Release Authorized: 

Date Sampled: NA

Reported: 01/23/09

Date Received: NA

Percent Total Solids: NA

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-as-rec Q
CLP-M	01/20/09	7471A	01/22/09	7439-97-6	Mercury	0.01	0.01 U

U-Analyte undetected at given RL

RL-Reporting Limit

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: NC LA.3 DEF REP.2
SAMPLE

Lab Sample ID: OI77A
LIMS ID: 09-2015
Matrix: Tissue
Data Release Authorized: 
Reported: 01/23/09

QC Report No: OI77-Newfields Northwest
Project: MARINA PARK
Date Sampled: 01/14/09
Date Received: 01/16/09

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-as-rec Q
CLP-M	01/20/09	7471A	01/22/09	7439-97-6	Mercury	0.01	0.01 U

U-Analyte undetected at given RL
RL-Reporting Limit

INORGANICS ANALYSIS DATA SHEET

TOTAL METALS

Page 1 of 1

Sample ID: NC LA.3 DEF REP.2
DUPLICATE

Lab Sample ID: OI77A

LIMS ID: 09-2015

Matrix: Tissue

Data Release Authorized: 

Reported: 01/23/09

QC Report No: OI77-Newfields Northwest

Project: MARINA PARK

Date Sampled: 01/14/09

Date Received: 01/16/09

MATRIX DUPLICATE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample	Duplicate	RPD	Control Limit	Q
Mercury	7471A	0.01 U	0.01 U	0.0%	+/- 0.01	L

Reported in mg/kg-as-rec

*-Control Limit Not Met

L-RPD Invalid, Limit = Detection Limit

INORGANICS ANALYSIS DATA SHEET

TOTAL METALS

Page 1 of 1

Sample ID: NC LA.3 DEF REP.2
MATRIX SPIKE

Lab Sample ID: OI77A

LIMS ID: 09-2015

Matrix: Tissue

Data Release Authorized: 

Reported: 01/23/09

QC Report No: OI77-Newfields Northwest

Project: MARINA PARK

Date Sampled: 01/14/09

Date Received: 01/16/09

MATRIX SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample	Spike	Spike Added	% Recovery	Q
Mercury	7471A	0.010 U	0.101	0.0950	106%	

Reported in mg/kg-as-rec

N-Control Limit Not Met

H-% Recovery Not Applicable, Sample Concentration Too High

NA-Not Applicable, Analyte Not Spiked

Percent Recovery Limits: 75-125%

INORGANICS ANALYSIS DATA SHEET

TOTAL METALS

Page 1 of 1

Sample ID: NC LA.3 DEF REP.3
SAMPLE

Lab Sample ID: OI77B

QC Report No: OI77-Newfields Northwest

LIMS ID: 09-2016

Project: MARINA PARK

Matrix: Tissue

Data Release Authorized: 

Date Sampled: 01/14/09

Reported: 01/23/09

Date Received: 01/16/09

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-as-rec Q
CLP-M	01/20/09	7471A	01/22/09	7439-97-6	Mercury	0.01	0.01 U

U-Analyte undetected at given RL

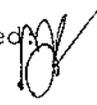
RL-Reporting Limit



INORGANICS ANALYSIS DATA SHEET

TOTAL METALS
Page 1 of 1

Sample ID: NC LA.3 DEF REP.4
SAMPLE

Lab Sample ID: OI77C
LIMS ID: 09-2017
Matrix: Tissue
Data Release Authorized: 
Reported: 01/23/09

QC Report No: OI77-Newfields Northwest
Project: MARINA PARK

Date Sampled: 01/14/09
Date Received: 01/16/09

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-as-rec Q	
CLP-M	01/20/09	7471A	01/22/09	7439-97-6	Mercury	0.01	0.01	U

U-Analyte undetected at given RL
RL-Reporting Limit

INORGANICS ANALYSIS DATA SHEET

TOTAL METALS

Page 1 of 1

Sample ID: NC LA.3 DEF REP.5
SAMPLE

Lab Sample ID: OI77D

LIMS ID: 09-2018

Matrix: Tissue

Data Release Authorized 

Reported: 01/23/09

QC Report No: OI77-Newfields Northwest

Project: MARINA PARK

Date Sampled: 01/14/09

Date Received: 01/16/09

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-as-rec Q	
CLP-M	01/20/09	7471A	01/22/09	7439-97-6	Mercury	0.009	0.009	U

U-Analyte undetected at given RL

RL-Reporting Limit

INORGANICS ANALYSIS DATA SHEET

TOTAL METALS

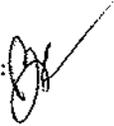
Page 1 of 1

Sample ID: NC COMP.C.L REP.1
SAMPLE

Lab Sample ID: OI77E

LIMS ID: 09-2019

Matrix: Tissue

Data Release Authorized: 

Reported: 01/23/09

QC Report No: OI77-Newfields Northwest

Project: MARINA PARK

Date Sampled: 01/14/09

Date Received: 01/16/09

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-as-rec Q	
CLP-M	01/20/09	7471A	01/22/09	7439-97-6	Mercury	0.01	0.01	U

U-Analyte undetected at given RL

RL-Reporting Limit

INORGANICS ANALYSIS DATA SHEET

TOTAL METALS
Page 1 of 1

Sample ID: NC COMP.C.L REP.2
SAMPLE

Lab Sample ID: OI77F

QC Report No: OI77-Newfields Northwest

LIMS ID: 09-2020

Project: MARINA PARK

Matrix: Tissue

Data Release Authorized 

Date Sampled: 01/14/09

Reported: 01/23/09

Date Received: 01/16/09

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-as-rec Q	
CLP-M	01/20/09	7471A	01/22/09	7439-97-6	Mercury	0.009	0.009	U

U-Analyte undetected at given RL

RL-Reporting Limit



INORGANICS ANALYSIS DATA SHEET

TOTAL METALS
Page 1 of 1

Sample ID: NC COMP.C.L REP.3
SAMPLE

Lab Sample ID: OI77G
LIMS ID: 09-2021
Matrix: Tissue
Data Release Authorized
Reported: 01/23/09

QC Report No: OI77-Newfields Northwest
Project: MARINA PARK

Date Sampled: 01/14/09
Date Received: 01/16/09

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-as-rec Q	
CLP-M	01/20/09	7471A	01/22/09	7439-97-6	Mercury	0.009	0.009	U

U-Analyte undetected at given RL
RL-Reporting Limit

INORGANICS ANALYSIS DATA SHEET

TOTAL METALS

Page 1 of 1

Sample ID: NC COMP.C.L REP.4
SAMPLE

Lab Sample ID: OI77H

LIMS ID: 09-2022

Matrix: Tissue

Data Release Authorized 

Reported: 01/23/09

QC Report No: OI77-Newfields Northwest

Project: MARINA PARK

Date Sampled: 01/14/09

Date Received: 01/16/09

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-as-rec Q	
CLP-M	01/20/09	7471A	01/22/09	7439-97-6	Mercury	0.009	0.009	U

U-Analyte undetected at given RL

RL-Reporting Limit



INORGANICS ANALYSIS DATA SHEET

TOTAL METALS

Page 1 of 1

Sample ID: NC COMP.C.L REP.5
SAMPLE

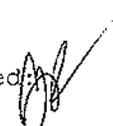
Lab Sample ID: OI77I

QC Report No: OI77-Newfields Northwest

LIMS ID: 09-2023

Project: MARINA PARK

Matrix: Tissue

Data Release Authorized: 

Date Sampled: 01/14/09

Reported: 01/23/09

Date Received: 01/16/09

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-as-rec Q
CLP-M	01/20/09	7471A	01/22/09	7439-97-6	Mercury	0.01	0.01 U

U-Analyte undetected at given RL
RL-Reporting Limit



INORGANICS ANALYSIS DATA SHEET

TOTAL METALS
Page 1 of 1

Sample ID: NC COMP.C.U REP.1
SAMPLE

Lab Sample ID: OI77J
LIMS ID: 09-2024
Matrix: Tissue
Data Release Authorized
Reported: 01/23/09

QC Report No: OI77-Newfields Northwest
Project: MARINA PARK

Date Sampled: 01/14/09
Date Received: 01/16/09

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-as-rec Q
CLP-M	01/20/09	7471A	01/22/09	7439-97-6	Mercury	0.009	0.009

U-Analyte undetected at given RL
RL-Reporting Limit

INORGANICS ANALYSIS DATA SHEET

TOTAL METALS

Page 1 of 1

Sample ID: NC COMP.C.U REP.2
SAMPLE

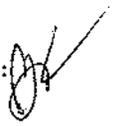
Lab Sample ID: OI77K

QC Report No: OI77-Newfields Northwest

LIMS ID: 09-2025

Project: MARINA PARK

Matrix: Tissue

Data Release Authorized: 

Date Sampled: 01/14/09

Reported: 01/23/09

Date Received: 01/16/09

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-as-rec Q	
CLP-M	01/20/09	7471A	01/22/09	7439-97-6	Mercury	0.01	0.01	U

U-Analyte undetected at given RL

RL-Reporting Limit

INORGANICS ANALYSIS DATA SHEET

TOTAL METALS

Page 1 of 1

Sample ID: NC COMP.C.U REP.3
SAMPLE

Lab Sample ID: OI77L

QC Report No: OI77-Newfields Northwest

LIMS ID: 09-2026

Project: MARINA PARK

Matrix: Tissue

Data Release Authorized: 

Date Sampled: 01/14/09

Reported: 01/23/09

Date Received: 01/16/09

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-as-rec Q
CLP-M	01/20/09	7471A	01/22/09	7439-97-6	Mercury	0.009	0.011

U-Analyte undetected at given RL

RL-Reporting Limit

INORGANICS ANALYSIS DATA SHEET

TOTAL METALS
Page 1 of 1

Sample ID: NC COMP.C.U REP.4
SAMPLE

Lab Sample ID: OI77M

QC Report No: OI77-Newfields Northwest

LIMS ID: 09-2027

Project: MARINA PARK

Matrix: Tissue

Data Release Authorized 

Date Sampled: 01/14/09

Reported: 01/23/09

Date Received: 01/16/09

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-as-rec Q	
CLP-M	01/20/09	7471A	01/22/09	7439-97-6	Mercury	0.01	0.01	U

U-Analyte undetected at given RL

RL-Reporting Limit

INORGANICS ANALYSIS DATA SHEET

TOTAL METALS

Page 1 of 1

Sample ID: NC COMP.C.U REP.5
SAMPLE

Lab Sample ID: OI77N

LIMS ID: 09-2028

Matrix: Tissue

Data Release Authorized: 

Reported: 01/23/09

QC Report No: OI77-Newfields Northwest

Project: MARINA PARK

Date Sampled: 01/14/09

Date Received: 01/16/09

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-as-rec Q	
CLP-M	01/20/09	7471A	01/22/09	7439-97-6	Mercury	0.009	0.009	U

U-Analyte undetected at given RL

RL-Reporting Limit

INORGANICS ANALYSIS DATA SHEET

TOTAL METALS

Page 1 of 1

Sample ID: LAB CONTROL

Lab Sample ID: OI77LCS

LIMS ID: 09-2016

Matrix: Tissue

Data Release Authorized: 

Reported: 01/23/09

QC Report No: OI77-Newfields Northwest

Project: MARINA PARK

Date Sampled: NA

Date Received: NA

BLANK SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Spike Found	Spike Added	% Recovery	Q
Mercury	7471A	0.21	0.20	105%	

Reported in mg/kg-wet

N-Control limit not met

NA-Not Applicable, Analyte Not Spiked

Control Limits: 80-120%

INORGANICS ANALYSIS DATA SHEET

TOTAL METALS

Sample ID: METHOD BLANK

Page 1 of 1

Lab Sample ID: OI77MB

QC Report No: OI77-Newfields Northwest

LIMS ID: 09-2016

Project: MARINA PARK

Matrix: Tissue

Data Release Authorized: 

Date Sampled: NA

Reported: 01/23/09

Date Received: NA

Percent Total Solids: NA

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-as-rec Q
CLP-M	01/20/09	7471A	01/22/09	7439-97-6	Mercury	0.01	0.01 U

U-Analyte undetected at given RL

RL-Reporting Limit



28 DAY BIOACCUMULATION WQ DATA SHEET

CLIENT City of Newport Beach	PROJECT Marina Park	SPECIES 1 <i>Macoma nasuta</i>	NEWFIELDS LABORATORY Port Gamble Bath 4	PROTOCOL ITM (USEPA/USACE 1998), OTM (USEPA/USACE 1991), ASTM E 1611, EPA Region 4 RIM (1993)
NEWFIELDS JOB NUMBER 1105-005-860	PROJECT MANAGER Bill Gardiner	WATER DESCRIPTION North Hood Canal, filtered	TEST START DATE 16-Dec-2008	TEST END DATE 13-Jan-2009

WATER QUALITY DATA

CLIENT/NEWFIELDS ID	DAY	REP	JAR #	DO (mg/L)		TEMP (C)		SALINITY		pH		FLOW ml/30sec
				>4.5		15±1		32±2		7.8±0.5		
				meter	mg/L	meter	°C	meter	ppt	meter	unit	
Control /	0	1	4	3	7.4	3	15.1	3	32	3	7.8	39
		2	3	7.5	15.1	32	7.8	40				
		3	8	7.5	15.1	31	7.8	38				
		4	5	7.3	15.1	31	7.8	38				
		5	20	7.6	15.2	32	7.9	38				
Control /	1	4	3	6.4	7	15.9	3	32	3	7.5	38	
Control /	2	3	3	7.0	3	15.8	3	31	3	7.7	39	
Control /	3	8	3	5.8	3	15.8	3	31	3	7.6	38	
Control /	4	5	3	6.1	3	15.8	3	31	3	7.7	40	
Control /	5	20	3	6.3	3	16.0	3	31	3	7.5	40	
Control /	6	4	3	6.8	3	15.7	3	32	3	7.8	39	
Control /	7	3	3	6.6	3	15.5	3	32	3	7.8	39	
Control /	8	8	3	6.9	3	15.5	3	32	3	7.8	42	
Control /	9	5	3	7.0	3	15.5	3	32	3	7.4	41	
Control /	10	20	3	6.0	3	15.5	3	33	3	7.4	40	
Control /	11	4	3	7.3	3	15.8	3	32	3	7.6	42	
Control /	12	3	3	6.7	3	15.6	3	32	3	7.6	39	
Control /	13	8	3	7.1	3	15.5	3	32	3	7.8	38	
Control /	14	5	3	7.0	3	15.5	3	32	3	7.9	42	



28 DAY BIOACCUMULATION WQ DATA SHEET

CLIENT City of Newport Beach	PROJECT Marina Park	SPECIES 1 <i>Macoma nasuta</i>	NEWFIELDS LABORATORY Port Gamble Bath 4	PROTOCOL ITM (USEPA/USACE 1988), OTM (USEPA/USACE 1991), ASTM E 1611, EPA Region 4 RIM (1993)
NEWFIELDS JOB NUMBER 1105-005-860	PROJECT MANAGER Bill Gardiner	WATER DESCRIPTION North Hood Canal, filtered	TEST START DATE 16-Dec-2008	TEST END DATE 13-Jan-2009

WATER QUALITY DATA

CLIENT/NEWFIELDS ID	DAY	REP	JAR #	DO (mg/L)		TEMP (C)		SALINITY		pH		FLOW ml/30sec
				meter	mg/L	meter	°C	meter	ppt	meter	unit	
Control /	15	5	20	3	6.7	3	15.5	3	32	3	8.1	42
Control /	16	1	4	4	7.2	4	15.5	1	32	1	7.8	41
Control /	17	2	3	4	7.3	4	16.1	1	32	1	7.3	40
Control /	18	3	8	4	7.6	4	15.7	1	32	1	7.7	38
Control /	19	4	5	7	7.7	4	15.7	1	32	1	7.7	38
Control /	20	5	20	4	7.6	4	15.8	1	32	1	7.6	40
Control /	21	1	4	4	7.2	4	16.0	1	32	1	7.5	42
Control /	22	2	3	4	7.3	4	16.1	1	32	1	7.6	42
Control /	23	3	8	3	7.3	3	15.5	3	32	3	7.3	42
Control /	24	4	5	3	7.3	3	15.2	3	32	3	7.3	40
Control /	25	5	20	4	7.1	4	15.2	1	32	1	7.5	39
Control /	26	1	4	3	6.9	3	15.1	3	32	3	7.7	41
Control /	27	2	3	4	7.5	4	15.5	1	31	1	7.5	42
		1	4	4	8.6	4	15.8	1	31	1	7.7	
		2	3	1	7.8	1	15.8	1	31	1	7.7	
Control /	28	3	8	1	7.6	1	15.8	1	31	1	7.6	
		4	5	1	7.9	1	15.8	1	31	1	7.6	
		5	20	1	7.6	1	16.0	1	31	1	7.4	



28 DAY BIOACCUMULATION WQ DATA SHEET

CLIENT City of Newport Beach NEWFIELDS JOB NUMBER 1105-005-860	PROJECT Marina Park PROJECT MANAGER Bill Gardiner	SPECIES 1 Macoma nasuta	NEWFIELDS LABORATORY Port Gamble Bath 4	PROTOCOL ITM (USEPA/USACE 1998), OTM (USEPA/USACE 1991), ASTM E 1611, EPA Region 4 RIM (1993)
		WATER DESCRIPTION North Hood Canal, filtered	TEST START DATE 16-Dec-2008	TEST END DATE 13-Jan-2009

WATER QUALITY DATA

CLIENT/NEWFIELDS ID	DAY	REP	JAR #	DO (mg/L)		TEMP (C)		SALINITY (ppt)		pH		FLOW ml/30sec
				meter	mg/L	meter	°C	meter	ppt	meter	unit	
				DO		TEMP		SALINITY		pH		
LA-3 Ref /	0	1	6	3	7.4	3	15.1	3	32	3	7.8	42
		2	7	1	7.7	1	15.1	1	31	1	7.8	42
		3	11	1	7.7	1	15.0	1	31	1	7.7	42
		4	1	1	7.7	1	15.0	1	31	1	7.8	41
		5	2	1	7.3	1	15.0	1	32	1	7.8	39
LA-3 Ref /	1	1	6	3	6.6	3	16.0	3	32	3	7.4	42
LA-3 Ref /	2	2	7	3	6.6	3	15.8	3	32	3	7.7	38
LA-3 Ref /	3	3	11	3	7.2	3	15.5	3	31	3	7.7	41
LA-3 Ref /	4	4	1	3	7.1	3	15.9	3	31	3	7.7	40
LA-3 Ref /	5	5	2	3	6.8	3	15.9	3	32	3	7.7	41
LA-3 Ref /	6	1	6	3	6.1	3	15.8	3	32	3	7.7	42
LA-3 Ref /	7	2	7	3	6.3	3	15.5	3	32	3	7.8	41
LA-3 Ref /	8	3	11	3	6.3	3	15.4	3	32	3	7.7	42
LA-3 Ref /	9	4	1	3	6.6	3	15.5	3	32	3	7.4	42
LA-3 Ref /	10	5	2	3	6.4	3	15.4	3	33	3	7.4	40
LA-3 Ref /	11	1	6	3	6.5	3	15.4	3	32	3	7.7	38
LA-3 Ref /	12	2	7	3	6.5	3	15.5	3	32	3	7.6	42
LA-3 Ref /	13	3	11	3	6.1	3	15.5	3	32	3	7.8	39
LA-3 Ref /	14	4	1	3	6.8	3	16.7	3	32	3	8.0	40

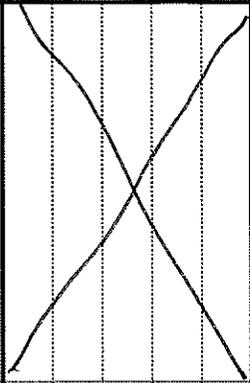


28 DAY BIOACCUMULATION WQ DATA SHEET

CLIENT City of Newport Beach	PROJECT Marina Park	SPECIES 1 Macoma nasuta	NEWFIELDS LABORATORY Port Gamble Bath 4	PROTOCOL ITM (USEPA/USACE 1998), OTM (USEPA/USACE 1991), ASTM E 1611, EPA Region 4 RIM (1993)
NEWFIELDS JOB NUMBER 1105-005-860	PROJECT MANAGER Bill Gardiner	WATER DESCRIPTION North Hood Canal; filtered	TEST START DATE 16-Dec-2008	TEST END DATE 13-Jan-2009

WATER QUALITY DATA

CLIENT/NEWFIELDS ID	DAY	REP	JAR #	DO (mg/L)		TEMP (C)		SALINITY		pH		FLOW ml/30sec
				>4.5		15±1		32±2		7.8±0.5		
				meter	mg/L	meter	°C	meter	ppt	meter	unit	
LA-3 Ref/	15	5	2	3	6.9	3	15.6	3	32	3	7.9	42
LA-3 Ref/	16	1	6	4	7.2	4	15.5	1	32	1	7.8	41
LA-3 Ref/	17	2	7	4	7.3	4	15.6	1	32	1	7.3	38
LA-3 Ref/	18	3	11	4	7.6	4	15.7	1	32	1	7.8	39
LA-3 Ref/	19	4	1	4	7.9	4	15.7	1	32	1	7.7	39
LA-3 Ref/	20	5	2	4	7.3	4	16.2	1	32	1	7.4	40
LA-3 Ref/	21	1	6	4	7.2	4	15.8	1	32	1	7.6	38
LA-3 Ref/	22	2	7	4	7.1	4	15.9	1	32	1	7.7	39
LA-3 Ref/	23	3	11	3	7.3	3	16.3	3	32	3	7.4	42
LA-3 Ref/	24	4	1	3	7.3	3	15.2	3	32	3	7.5	42
LA-3 Ref/	25	5	2	4	7.1	4	15.3	1	32	1	7.5	38
LA-3 Ref/	26	1	6	3	7.0	3	15.1	3	32	3	7.7	38
LA-3 Ref/	27	2	7	4	7.6	4	15.4	1	31	1	7.5	38
		1	6	4	7.7	4	15.8	1	31	1	7.7	
		2	7	1	7.6	1	15.8	1	31	1	7.7	
LA-3 Ref/	28	3	11	1	7.8	1	15.7	1	31	1	7.7	
		4	1	1	8.0	1	15.8	1	31	1	7.7	
		5	2	1	7.9	1	15.8	1	31	1	7.7	





28 DAY BIOACCUMULATION WQ DATA SHEET

CLIENT City of Newport Beach	PROJECT Marina Park	SPECIES 1 Macoma nasuta	NEWFIELDS LABORATORY Port Gamble Bath 4	PROTOCOL ITM (USEPA/USACE 1998), OTM (USEPA/USACE 1991), ASTM E 1611, EPA Region 4 RIM (1993)
NEWFIELDS JOB NUMBER 1105-005-860	PROJECT MANAGER Bill Gardiner	WATER DESCRIPTION North Hood Canal, filtered	TEST START DATE 16-Dec-2008	TEST END DATE 13-Jan-2009

WATER QUALITY DATA

CLIENT/NEWFIELDS ID	DAY	REP	JAR #	DO (mg/L) >4.5		TEMP (C) 15±1		SALIN (ppt) 32±2		pH 7.8±0.5		TECHNICIAN/DATE	FLOW ml/30sec
				meter	mg/L	meter	°C	meter	ppt	meter	unit		
Comp C-L/	0	1	10	3	7.7	3	15.2	3	31	3	7.7	J 12/16	38
		2	12	3	7.9	3	15.1	3	31	3	7.7		41
		3	13	3	7.9	3	14.9	3	32	3	7.8		38
		4	17	3	7.7	3	15.3	3	31	3	7.7		39
		5	9	3	7.6	3	15.1	3	32	3	7.7		41
Comp C-L/	1	1	10	3	6.5	3	15.8	3	32	3	7.5	J 12/17	42
Comp C-L/	2	2	12	3	7.3	3	15.7	3	32	3	7.7	J 12/18	38
Comp C-L/	3	3	13	3	7.3	3	15.6	3	31	3	7.7	CR 12/19	42
Comp C-L/	4	4	17	3	6.9	3	15.0	3	31	3	7.7	BK 12/20	41
Comp C-L/	5	5	9	3	6.5	3	15.8	3	32	3	7.7	MMB 12/21	41
Comp C-L/	6	1	10	3	6.6	3	15.8	3	32	3	7.7	J 12/22	38
Comp C-L/	7	2	12	3	6.7	3	15.5	3	32	3	7.7	J 12/23	38
Comp C-L/	8	3	13	3	6.4	3	15.4	3	32	3	7.8	J 12/24	42
Comp C-L/	9	4	17	3	6.4	3	15.4	3	32	3	7.3	T 12/25	40
Comp C-L/	10	5	9	3	5.8	3	15.4	3	33	3	7.4	T 12/26	40
Comp C-L/	11	1	10	3	6.4	3	15.5	3	32	3	7.7	T 12/27	38
Comp C-L/	12	2	12	3	6.4	3	15.4	3	32	3	7.6	J 12/28	38
Comp C-L/	13	3	13	3	6.6	3	15.5	3	32	3	7.8	J 12/29	42
Comp C-L/	14	4	17	3	6.9	3	15.4	3	32	3	7.8	MMB 12/30	38

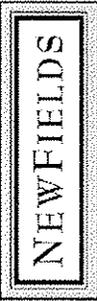
28 DAY BIOACCUMULATION WQ DATA SHEET



CLIENT City of Newport Beach	PROJECT Marina Park	SPECIES 1 Macoma nasuta	NEWFIELDS LABORATORY Port Gamble Bath 4	PROTOCOL ITM (USEPA/USACE 1998), OTM (USEPA/USACE 1991), ASTM E 1611, EPA Region 4 RIM (1993)
NEWFIELDS JOB NUMBER 1105-005-860	PROJECT MANAGER Bill Gardiner	WATER DESCRIPTION North Hood Canal, filtered	TEST START DATE 16-Dec-2008	TEST END DATE 13-Jan-2009

WATER QUALITY DATA

CLIENT/NEWFIELDS ID	DAY	REP	JAR #	DO (mg/L)		TEMP (C)		SALINITY		pH		FLOW ml/30sec
				>4.5		15±1		32±2		7.8±0.5		
				meter	mg/L	meter	°C	meter	ppt	meter	unit	
Comp C-L/	15	5	9	3	7.3	3	15.5	3	32	3	8.0	42
Comp C-L/	16	1	10	4	7.6	4	15.5	1	32	1	7.8	38
Comp C-L/	17	2	12	4	7.2	4	15.5	1	32	1	7.4	39
Comp C-L/	18	3	13	4	7.3	4	15.7	1	32	1	7.7	38
Comp C-L/	19	4	17	4	7.5	4	15.8	1	32	1	7.7	38
Comp C-L/	20	5	9	4	7.4	4	15.8	1	32	1	7.6	40
Comp C-L/	21	1	10	4	7.2	4	15.7	1	32	1	7.6	39
Comp C-L/	22	2	12	4	7.2	4	15.8	1	32	1	7.7	40
Comp C-L/	23	3	13	3	7.0	3	15.3	3	32	3	7.5	42
Comp C-L/	24	4	17	3	7.0	3	15.3	3	32	3	7.6	38
Comp C-L/	25	5	9	4	6.9	4	15.2	1	32	1	7.6	41
Comp C-L/	26	1	10	3	6.4	3	15.1	3	32	3	7.6	39
Comp C-L/	27	2	12	4	7.3	4	15.3	1	31	1	7.6	39
Comp C-L/	1	10	4	4	7.6	4	15.7	1	31	1	7.7	
	2	12	1	1	7.3	1	15.6	1	31	1	7.7	
	3	13	1	1	6.6	1	15.7	1	31	1	7.6	
	4	17	1	1	6.1	1	15.7	1	31	1	7.6	
	5	9	1	1	7.0	1	15.7	1	31	1	7.7	



28 DAY BIOACCUMULATION WQ DATA SHEET

CLIENT City of Newport Beach	PROJECT Marina Park	SPECIES 1 Macoma nasuta	NEWFIELDS LABORATORY Port Gamble Bath 4	PROTOCOL ITM (USEPA/USACE 1988), OTM (USEPA/USACE 1991), ASTM E 1811, EPA Region 4 RIM (1993)
NEWFIELDS JOB NUMBER 1105-005-860	PROJECT MANAGER Bill Gardiner	WATER DESCRIPTION North Hood Canal, filtered	TEST START DATE 16-Dec-2008	TEST END DATE 13-Jan-2009

WATER QUALITY DATA

CLIENT/NEWFIELDS ID	DAY	REP	JAR #	DO (mg/L)		TEMP (C)		SALINITY		PH		FLOW ml/30sec
				>4.5		15±1		32±2		7.8±0.5		
				meter	mg/L	meter	°C	meter	ppt	meter	unit	
Comp C-U /	1	16	3	7.7	15.2	3	32	3	7.7	40		
	2	15	3	7.6	15.1	3	32	3	7.7	42		
	3	19	3	7.3	15.1	3	32	3	8.1	38		
	4	14	3	7.5	15.1	3	31	3	7.8	40		
	5	18	3	7.8	15.3	3	31	3	7.7	42		
Comp C-U /	1	16	3	7.6	15.8	3	32	3	7.6	42		
Comp C-U /	2	15	3	7.2	15.8	3	32	3	7.7	42		
Comp C-U /	3	19	3	6.6	15.6	3	31	3	7.7	41		
Comp C-U /	4	14	3	6.9	15.6	3	31	3	7.7	42		
Comp C-U /	5	18	3	6.6	15.9	3	31	3	7.7	39		
Comp C-U /	6	16	3	7.1	15.6	3	32	3	7.8	42		
Comp C-U /	7	15	3	5.5	15.5	3	32	3	7.7	40		
Comp C-U /	8	19	3	6.2	15.4	3	32	3	7.7	40		
Comp C-U /	9	14	3	6.0	15.3	3	32	3	7.4	41		
Comp C-U /	10	18	3	6.2	15.5	3	33	3	7.4	40		
Comp C-U /	11	16	3	6.9	15.5	3	32	3	7.7	40		
Comp C-U /	12	15	3	6.5	15.4	3	32	3	7.6	38		
Comp C-U /	13	19	3	7.0	15.6	3	32	3	7.8	39		
Comp C-U /	14	14	3	6.9	15.4	3	32	3	7.9	40		



28 DAY BIOACCUMULATION WQ DATA SHEET

CLIENT City of Newport Beach	PROJECT Marina Park	SPECIES 1 Macoma nasuta	NEWFIELDS LABORATORY Port Gamble Bath 4	PROTOCOL ITM (USEPA/USACE 1988), OTM (USEPA/USACE 1991), ASTM E 1611, EPA Region 4 RIM (1993)
NEWFIELDS JOB NUMBER 1105-005-860	PROJECT MANAGER Bill Gardiner	WATER DESCRIPTION North Hood Canal, filtered	TEST START DATE 16-Dec-2008	TEST END DATE 13-Jan-2009

WATER QUALITY DATA

CLIENT/NEWFIELDS ID	DAY	REP	JAR #	DO (mg/L)		TEMP (C)		SALINITY		pH		FLOW ml/30sec
				meter	mg/L	meter	°C	meter	ppt	meter	unit	
Comp C-U /	15	5	18	3	6.4	3	15.7	3	32	3	8.3	38
Comp C-U /	16	1	16	4	7.2	4	15.5	1	32	1	7.8	40
Comp C-U /	17	2	15	4	7.1	4	15.4	1	32	1	7.5	42
Comp C-U /	18	3	19	4	7.7	4	15.8	1	32	1	7.8	39
Comp C-U /	19	4	114	4	7.2	4	15.7	1	32	1	7.7	38
Comp C-U /	20	5	18	4	7.1	4	15.7	1	32	1	7.6	42
Comp C-U /	21	1	16	4	7.2	4	15.6	1	32	1	7.6	41
Comp C-U /	22	2	15	4	6.9	4	15.8	1	32	1	7.7	40
Comp C-U /	23	3	19	3	7.3	3	15.4	3	32	3	7.6	42
Comp C-U /	24	4	14	3	7.0	3	15.1	3	32	3	7.6	38
Comp C-U /	25	5	18	4	7.2	4	15.2	1	32	1	7.7	42
Comp C-U /	26	1	16	3	7.0	3	15.0	3	32	3	7.7	39
Comp C-U /	27	2	15	4	7.4	4	15.3	1	31	1	7.6	40
Comp C-U /	1	16	4	4	7.6	4	15.8	1	31	1	7.7	
	2	15	1	1	7.5	1	15.7	1	31	1	7.7	
	3	19	1	1	7.8	1	15.8	1	31	1	7.7	
	4	14	1	1	7.4	1	15.8	1	31	1	7.7	
	5	18	1	1	7.6	1	15.8	1	31	1	7.7	

28-DAY BIOACCUMULATION MACOMA TEST OBSERVATION DATA SHEET 3

NEWFIELD

City of Newport Beach		Marina Park		1185-005-000		Bill Gardner		Bath #		ITEM (RESPONSE TIME, CUM OBSERVANCE) (W/TL, ASTM E 1611, EPA Region 9 Form 1700)		Macoma Adults	
Observation May		ENCOURT DATA & OBSERVATIONS										Total Response	
DATE	TIME	1	2	3	4	5	6	7	8	9	10	11	12
12/31	11/10/09	TS	GH	MMMB	MMMB	MMMB	MMMB	MMMB	MMMB	MMMB	MMMB	MMMB	MMMB
17	18	19	20	21	22	23	24	25	26	27	28	29	30
1	2	3	4	5	6	7	8	9	10	11	12	13	14
15	16	17	18	19	20	21	22	23	24	25	26	27	28
29	30	31	32	33	34	35	36	37	38	39	40	41	42
43	44	45	46	47	48	49	50	51	52	53	54	55	56
57	58	59	60	61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80	81	82	83	84
85	86	87	88	89	90	91	92	93	94	95	96	97	98
99	100	101	102	103	104	105	106	107	108	109	110	111	112
113	114	115	116	117	118	119	120	121	122	123	124	125	126
127	128	129	130	131	132	133	134	135	136	137	138	139	140
141	142	143	144	145	146	147	148	149	150	151	152	153	154
155	156	157	158	159	160	161	162	163	164	165	166	167	168
169	170	171	172	173	174	175	176	177	178	179	180	181	182
183	184	185	186	187	188	189	190	191	192	193	194	195	196
197	198	199	200	201	202	203	204	205	206	207	208	209	210
211	212	213	214	215	216	217	218	219	220	221	222	223	224
225	226	227	228	229	230	231	232	233	234	235	236	237	238
239	240	241	242	243	244	245	246	247	248	249	250	251	252
253	254	255	256	257	258	259	260	261	262	263	264	265	266
267	268	269	270	271	272	273	274	275	276	277	278	279	280
281	282	283	284	285	286	287	288	289	290	291	292	293	294
295	296	297	298	299	300	301	302	303	304	305	306	307	308
309	310	311	312	313	314	315	316	317	318	319	320	321	322
323	324	325	326	327	328	329	330	331	332	333	334	335	336
337	338	339	340	341	342	343	344	345	346	347	348	349	350
351	352	353	354	355	356	357	358	359	360	361	362	363	364
365	366	367	368	369	370	371	372	373	374	375	376	377	378
379	380	381	382	383	384	385	386	387	388	389	390	391	392
393	394	395	396	397	398	399	400	401	402	403	404	405	406
407	408	409	410	411	412	413	414	415	416	417	418	419	420
421	422	423	424	425	426	427	428	429	430	431	432	433	434
435	436	437	438	439	440	441	442	443	444	445	446	447	448
449	450	451	452	453	454	455	456	457	458	459	460	461	462
463	464	465	466	467	468	469	470	471	472	473	474	475	476
477	478	479	480	481	482	483	484	485	486	487	488	489	490
491	492	493	494	495	496	497	498	499	500	501	502	503	504
505	506	507	508	509	510	511	512	513	514	515	516	517	518
519	520	521	522	523	524	525	526	527	528	529	530	531	532
533	534	535	536	537	538	539	540	541	542	543	544	545	546
547	548	549	550	551	552	553	554	555	556	557	558	559	560
561	562	563	564	565	566	567	568	569	570	571	572	573	574
575	576	577	578	579	580	581	582	583	584	585	586	587	588
589	590	591	592	593	594	595	596	597	598	599	600	601	602
603	604	605	606	607	608	609	610	611	612	613	614	615	616
617	618	619	620	621	622	623	624	625	626	627	628	629	630
631	632	633	634	635	636	637	638	639	640	641	642	643	644
645	646	647	648	649	650	651	652	653	654	655	656	657	658
659	660	661	662	663	664	665	666	667	668	669	670	671	672
673	674	675	676	677	678	679	680	681	682	683	684	685	686
687	688	689	690	691	692	693	694	695	696	697	698	699	700
701	702	703	704	705	706	707	708	709	710	711	712	713	714
715	716	717	718	719	720	721	722	723	724	725	726	727	728
729	730	731	732	733	734	735	736	737	738	739	740	741	742
743	744	745	746	747	748	749	750	751	752	753	754	755	756
757	758	759	760	761	762	763	764	765	766	767	768	769	770
771	772	773	774	775	776	777	778	779	780	781	782	783	784
785	786	787	788	789	790	791	792	793	794	795	796	797	798
799	800	801	802	803	804	805	806	807	808	809	810	811	812
813	814	815	816	817	818	819	820	821	822	823	824	825	826
827	828	829	830	831	832	833	834	835	836	837	838	839	840
841	842	843	844	845	846	847	848	849	850	851	852	853	854
855	856	857	858	859	860	861	862	863	864	865	866	867	868
869	870	871	872	873	874	875	876	877	878	879	880	881	882
883	884	885	886	887	888	889	890	891	892	893	894	895	896
897	898	899	900	901	902	903	904	905	906	907	908	909	910
911	912	913	914	915	916	917	918	919	920	921	922	923	924
925	926	927	928	929	930	931	932	933	934	935	936	937	938
939	940	941	942	943	944	945	946	947	948	949	950	951	952
953	954	955	956	957	958	959	960	961	962	963	964	965	966
967	968	969	970	971	972	973	974	975	976	977	978	979	980
981	982	983	984	985	986	987	988	989	990	991	992	993	994
995	996	997	998	999	1000	1001	1002	1003	1004	1005	1006	1007	1008
1009	1010	1011	1012	1013	1014	1015	1016	1017	1018	1019	1020	1021	1022
1023	1024	1025	1026	1027	1028	1029	1030	1031	1032	1033	1034	1035	1036
1037	1038	1039	1040	1041	1042	1043	1044	1045	1046	1047	1048	1049	1050
1051	1052	1053	1054	1055	1056	1057	1058	1059	1060	1061	1062	1063	1064
1065	1066	1067	1068	1069	1070	1071	1072	1073	1074	1075	1076	1077	1078
1079	1080	1081	1082	1083	1084	1085	1086	1087	1088	1089	1090	1091	1092
1093	1094	1095	1096	1097	1098	1099	1100	1101	1102	1103	1104	1105	1106
1107	1108	1109	1110	1111	1112	1113	1114	1115	1116	1117	1118	1119	1120
1121	1122	1123	1124	1125	1126	1127	1128	1129	1130	1131	1132	1133	1134
1135	1136	1137	1138	1139	1140	1141	1142	1143	1144	1145	1146	1147	1148
1149	1150	1151	1152	1153	1154	1155	1156	1157	1158	1159	1160	1161	1162
1163	1164	1165	1166	1167	1168	1169	1170	1171	1172	1173	1174	1175	1176
1177	1178	1179	1180	1181	1182	1183	1184	1185	1186	1187	1188	1189	1190
1191	1192	1193	1194	1195	1196	1197	1198	1199	1200	1201	1202	1203	1204
1205	1206	1207	1208	1209	1210	1211	1212	1213	1214	1215	1216	1217	1218
1219	1220												

28-DAY BRACCCUMULATION MACOMA TEST OBSERVATION DATA SHEET 3

NEW FIELDS

CLIENT		PROPERTY ADDRESS		PROJECT NUMBER		SAMPLING LABORATORY		ANALYSIS		METHODS		
City of Newport Beach		1104-005-880		Bldg 4		Bldg 4		PM SUBPASSAGE - 1988, OTH SUBPASSAGE - 1989, ADP 101, 101.1, EPA Region 9 (Feb 1988)		Macoma Test		
ENCUMPT DATA & OBSERVATIONS												
Observation Key												
100% - 100% 75% - 75% 50% - 50% 25% - 25% 0% - 0%												
CLIENT / SUBPROJECT	DATE	TIME	WIND	WAVE	TEMP	MOON	SEA	WAVE	WIND	WAVE	TEMP	MOON
Comp C-1	11/1/09	12:31	TS	11/1/09	11:09	11/1/09	11/1/09	11/1/09	11/1/09	11/1/09	11/1/09	11/1/09
Comp C-2	11/2/09	12:31	TS	11/2/09	11:09	11/2/09	11/2/09	11/2/09	11/2/09	11/2/09	11/2/09	11/2/09
Comp C-3	11/3/09	12:31	TS	11/3/09	11:09	11/3/09	11/3/09	11/3/09	11/3/09	11/3/09	11/3/09	11/3/09
Comp C-4	11/4/09	12:31	TS	11/4/09	11:09	11/4/09	11/4/09	11/4/09	11/4/09	11/4/09	11/4/09	11/4/09
Comp C-5	11/5/09	12:31	TS	11/5/09	11:09	11/5/09	11/5/09	11/5/09	11/5/09	11/5/09	11/5/09	11/5/09
Control 1	11/6/09	12:31	TS	11/6/09	11:09	11/6/09	11/6/09	11/6/09	11/6/09	11/6/09	11/6/09	11/6/09
Comp C-1	11/7/09	12:31	TS	11/7/09	11:09	11/7/09	11/7/09	11/7/09	11/7/09	11/7/09	11/7/09	11/7/09
Comp C-2	11/8/09	12:31	TS	11/8/09	11:09	11/8/09	11/8/09	11/8/09	11/8/09	11/8/09	11/8/09	11/8/09
Comp C-3	11/9/09	12:31	TS	11/9/09	11:09	11/9/09	11/9/09	11/9/09	11/9/09	11/9/09	11/9/09	11/9/09
Comp C-4	11/10/09	12:31	TS	11/10/09	11:09	11/10/09	11/10/09	11/10/09	11/10/09	11/10/09	11/10/09	11/10/09
Comp C-5	11/11/09	12:31	TS	11/11/09	11:09	11/11/09	11/11/09	11/11/09	11/11/09	11/11/09	11/11/09	11/11/09
Control 1	11/12/09	12:31	TS	11/12/09	11:09	11/12/09	11/12/09	11/12/09	11/12/09	11/12/09	11/12/09	11/12/09
Comp C-1	11/13/09	12:31	TS	11/13/09	11:09	11/13/09	11/13/09	11/13/09	11/13/09	11/13/09	11/13/09	11/13/09
Comp C-2	11/14/09	12:31	TS	11/14/09	11:09	11/14/09	11/14/09	11/14/09	11/14/09	11/14/09	11/14/09	11/14/09
Comp C-3	11/15/09	12:31	TS	11/15/09	11:09	11/15/09	11/15/09	11/15/09	11/15/09	11/15/09	11/15/09	11/15/09
Comp C-4	11/16/09	12:31	TS	11/16/09	11:09	11/16/09	11/16/09	11/16/09	11/16/09	11/16/09	11/16/09	11/16/09
Comp C-5	11/17/09	12:31	TS	11/17/09	11:09	11/17/09	11/17/09	11/17/09	11/17/09	11/17/09	11/17/09	11/17/09
Control 1	11/18/09	12:31	TS	11/18/09	11:09	11/18/09	11/18/09	11/18/09	11/18/09	11/18/09	11/18/09	11/18/09
Comp C-1	11/19/09	12:31	TS	11/19/09	11:09	11/19/09	11/19/09	11/19/09	11/19/09	11/19/09	11/19/09	11/19/09
Comp C-2	11/20/09	12:31	TS	11/20/09	11:09	11/20/09	11/20/09	11/20/09	11/20/09	11/20/09	11/20/09	11/20/09
Comp C-3	11/21/09	12:31	TS	11/21/09	11:09	11/21/09	11/21/09	11/21/09	11/21/09	11/21/09	11/21/09	11/21/09
Comp C-4	11/22/09	12:31	TS	11/22/09	11:09	11/22/09	11/22/09	11/22/09	11/22/09	11/22/09	11/22/09	11/22/09
Comp C-5	11/23/09	12:31	TS	11/23/09	11:09	11/23/09	11/23/09	11/23/09	11/23/09	11/23/09	11/23/09	11/23/09
Control 1	11/24/09	12:31	TS	11/24/09	11:09	11/24/09	11/24/09	11/24/09	11/24/09	11/24/09	11/24/09	11/24/09
Comp C-1	11/25/09	12:31	TS	11/25/09	11:09	11/25/09	11/25/09	11/25/09	11/25/09	11/25/09	11/25/09	11/25/09
Comp C-2	11/26/09	12:31	TS	11/26/09	11:09	11/26/09	11/26/09	11/26/09	11/26/09	11/26/09	11/26/09	11/26/09
Comp C-3	11/27/09	12:31	TS	11/27/09	11:09	11/27/09	11/27/09	11/27/09	11/27/09	11/27/09	11/27/09	11/27/09
Comp C-4	11/28/09	12:31	TS	11/28/09	11:09	11/28/09	11/28/09	11/28/09	11/28/09	11/28/09	11/28/09	11/28/09
Comp C-5	11/29/09	12:31	TS	11/29/09	11:09	11/29/09	11/29/09	11/29/09	11/29/09	11/29/09	11/29/09	11/29/09
Control 1	11/30/09	12:31	TS	11/30/09	11:09	11/30/09	11/30/09	11/30/09	11/30/09	11/30/09	11/30/09	11/30/09



ORGANISM RECEIPT LOG

Date:		12/12/08		Time:		1045		Newfields Batch No.		RG 121208	
Organism:		Pracomb		Source:		J&G Gunstone		Invoice Attached		Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Address:		Dr File		Contact:		Reed Gunstone		Phone:		Dr File	
No. Ordered:		780		No. Received:		780		Source Batch:		Field	
Condition of Organisms:		Good		Approximate Size or Age:		Adult		Shipper:		Newfields Courier	
Condition of Container:		Good		Received By:		BH		Confirmation of ID of Organism:		Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Notes:				Technician (Initials):		BH					
pH (Units)				Temp. (°C)				D.O. (mg/L)			
Conductivity or Salinity (Include Units)				Technician (Initials)		BH					
Notes:		* transported dry									



ORGANISM RECEIPT LOG

Date:		12/13/08		Time:		1400		Newfields Batch No.		JB 8990	
Organism:		Amp Nephys		Source:		John Biezina		Address:		On file	
Invoice Attached		Yes		No		Phone:		On file		Contact:	
No. Ordered:		2000		No. Received:		2000+		Source Batch:		Field	
Condition of Organisms:		Good		Approximate Size or Age:		Vary - Adult		Shipper:		Fed Ex	
Condition of Container:		Good		Received By:		BH		B of L (Tracking No.)		8662 6888 8990	
Confirmation of ID of Organism:		Yes		No		Technician (Initials):		Confirmation of ID of Organism:		Yes	
Notes:				Notes:				pH (Units)		7.4	
Temp. (°C)		13.0		D.O. (mg/L)		35+		Conductivity or Salinity (Include Units)		35	
Technician (Initials)		BH									
Notes:											